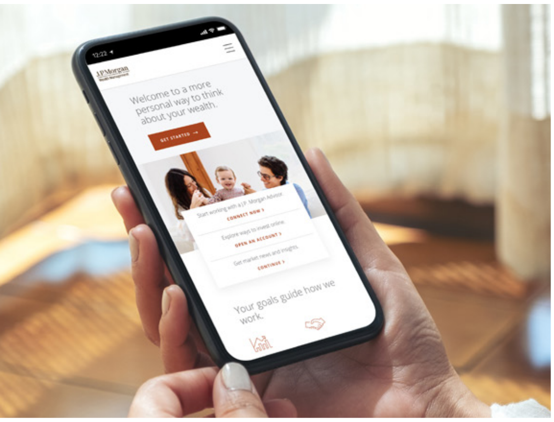
2020 ANNUAL REPORT



$30B

to advance racial equity

JPMorgan Chase & Co.

Financial Highlights

As of or for the year ended December 31, (in millions, except per share, ratio data and headcount)	2020	2019	2018
Selected income statement data			
Total net revenue	**$ 119,543**	$ 115,399	$ 108,783
Total noninterest expense	**66,656**	65,269	63,148
Pre-provision profit	**52,887**	50,130	45,635
Provision for credit losses	**17,480**	5,585	4,871
Net income	**$ 29,131**	$ 36,431	$ 32,474
Per common share data			
Net income per share:			
Basic	**$ 8.89**	$ 10.75	$ 9.04
Diluted	**8.88**	10.72	9.00
Book value per share	**81.75**	75.98	70.35
Tangible book value per share (TBVPS)[(a)]	**66.11**	60.98	56.33
Cash dividends declared per share	**3.60**	3.40	2.72
Selected ratios			
Return on common equity	**12%**	15%	13%
Return on tangible common equity (ROTCE)[(a)]	**14**	19	17
Liquidity coverage ratio (average)[(b)]	**110**	116	113
Common equity Tier 1 capital ratio[(c)]	**13.1**	12.4	12.0
Tier 1 capital ratio[(c)]	**15.0**	14.1	13.7
Total capital ratio[(c)]	**17.3**	16.0	15.5
Selected balance sheet data (period-end)			
Loans	**$1,012,853**	$ 997,620	$1,015,760
Total assets	**3,386,071**	2,687,379	2,622,532
Deposits	**2,144,257**	1,562,431	1,470,666
Common stockholders' equity	**249,291**	234,337	230,447
Total stockholders' equity	**279,354**	261,330	256,515
Market data			
Closing share price	**$ 127.07**	$ 139.40	$ 97.62
Market capitalization	**387,492**	429,913	319,780
Common shares at period-end	**3,049.4**	3,084.0	3,275.8
Headcount	**255,351**	256,981	256,105

(a) TBVPS and ROTCE are each non-GAAP financial measures. Refer to Explanation and Reconciliation of the Firm's Use of Non-GAAP Financial Measures on pages 62–64 for additional information on these measures.
(b) Refer to Liquidity Risk Management on pages 102–108 for additional information on this measure.
(c) The ratios presented are calculated under the Basel III Fully Phased-In Approach. Refer to Capital Risk Management on pages 91–101 for additional information on these measures.

JPMorgan Chase & Co. (NYSE: JPM) is a leading global financial services firm with assets of $3.4 trillion and operations worldwide. The firm is a leader in investment banking, financial services for consumers and small businesses, commercial banking, financial transaction processing and asset management. A component of the Dow Jones Industrial Average, JPMorgan Chase & Co. serves millions of customers in the United States and many of the world's most prominent corporate, institutional and government clients under its J.P. Morgan and Chase brands.

Information about J.P. Morgan's capabilities can be found at jpmorgan.com and about Chase's capabilities at chase.com. Information about JPMorgan Chase & Co. is available at jpmorganchase.com.

$30B
ADVANCE RACIAL EQUITY

$30 billion to advance racial equity

#1
INVESTMENT BANK

#1 globally in both investment banking fees and Markets revenue

100
HUMAN RIGHTS EQUALITY

100: Score on Human Rights Campaign's Corporate Equality Index

$200B
SUSTAINABLE DEVELOPMENT

Committed to finance and facilitate $200 billion to drive action on climate change and advance sustainable development

$2.3T
CREDIT AND CAPITAL RAISED

$2.3 trillion in credit and capital raised for consumers and clients of all sizes, including those in some of the hardest-hit industries

#1
CUSTOMER SATISFACTION

#1 in customer satisfaction with online banking among national banks according to J.D. Power

#1
TRADITIONAL MIDDLE MARKET LENDER

#1 traditional Middle Market bookrunner in the U.S.

TOP 10

Named to *Fortune* magazine's Most Admired Companies list

#1
MULTIFAMILY LENDER

#1 U.S. multifamily lender

#1
WEALTH MANAGEMENT APP

#1 digital wealth management app according to J.D. Power

$276B
AWM CLIENT ASSET INFLOWS

$276 billion in total Asset & Wealth Management client asset inflows

#1
COVID-19 RESPONSE

#1 bank for COVID-19 response according to JUST Capital

Dear Fellow Shareholders,

Jamie Dimon,
Chairman and
Chief Executive Officer

2020 was an extraordinary year by any measure. It was a year of a global pandemic, a global recession, unprecedented government actions, turbulent elections, and deeply felt social and racial injustice. It was a year in which each of us faced difficult personal challenges, and a staggering number of us lost loved ones. It was also a year when those among us with less were disproportionately hurt by joblessness and poverty. And it was a time when companies discovered what they really were and, sometimes, what they might become.

Watching events unfold throughout the year, we were keenly focused on what we, as a company, could do to serve. As I begin this annual letter to shareholders, I am proud of what our company and our tens of thousands of employees around the world achieved, collectively and individually. As you know, we have long championed the essential role of banking in a community — its potential for bringing people together, for enabling companies and individuals to reach for their dreams, and for being a source of strength in difficult times. Those opportunities were powerfully presented to us this year, and I am proud of how we stepped up. I discuss these themes later in this letter.

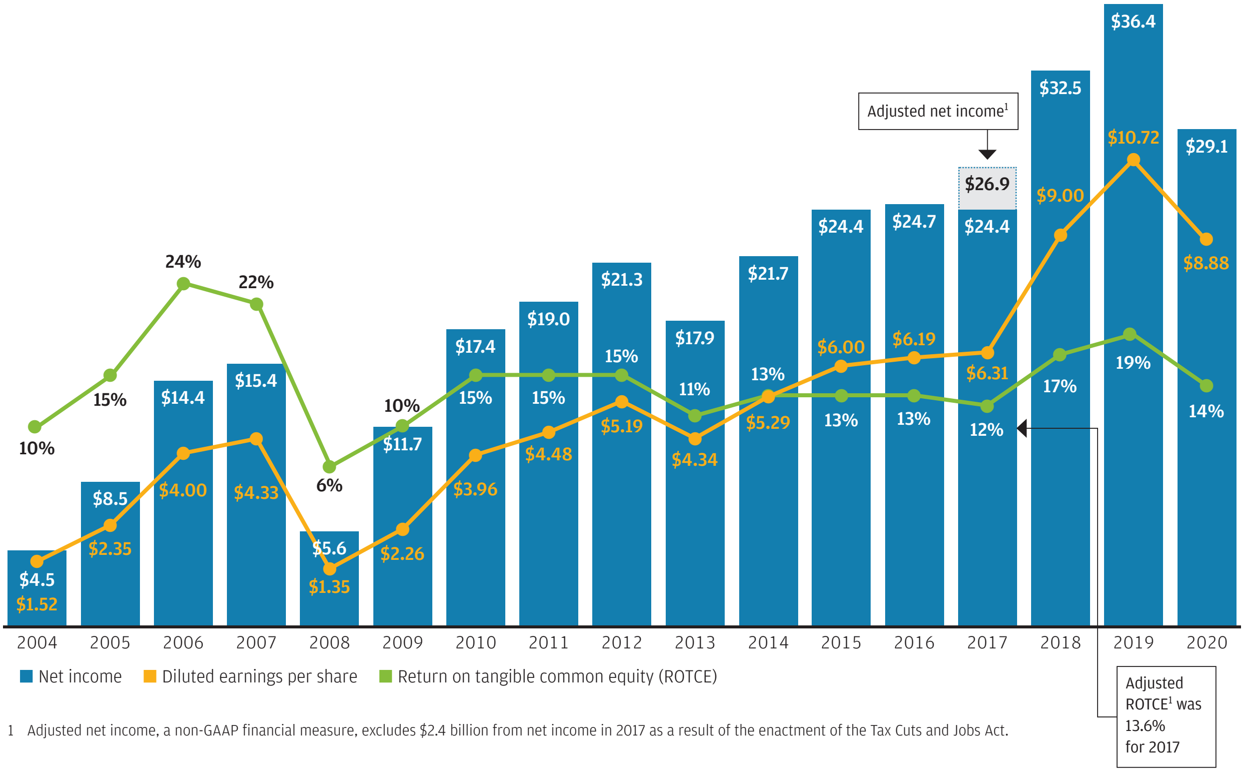
As I look back on the last year and the last two decades — starting from my time as CEO of Bank One in 2000 — it is remarkable how much we persevered and have accomplished, not only in terms of financial performance but also in our steadfast dedication to help clients, communities and countries throughout the world. 2020 was another strong year for JPMorgan Chase, with the firm generating record revenue, as well as numerous other records in each of our lines of business. We earned $29.1 billion in net income on revenue of $122.9 billion versus $36.4 billion on revenue of $118.5 billion in 2019, reflecting strong underlying performance across our businesses offset by additional reserves under new accounting rules. We generally grew market share across our businesses and continued to make significant investments in products, people and technology, all while maintaining credit discipline and a fortress balance sheet. In total, we extended credit and raised $2.3 trillion in capital for businesses, institutional clients and U.S. customers.

JPMorgan Chase stock is owned by large institutions, pension plans, mutual funds and directly by individual investors. However, it is important to remember that in almost all cases, the ultimate beneficiaries are the individuals in our communities. More than 100 million people in the United States own stock, and a large percentage of these individuals, in one way or another, own JPMorgan Chase stock. Many of these people are veterans, teachers, police officers, firefighters, healthcare workers, retirees or those saving for a home, school or retirement. Your management team goes to work every day recognizing the enormous responsibility that we have to perform for our shareholders.

While we don't run the company worrying about the stock price in the short run, in the **long run** our stock price is a measure of the progress we have made over the years. This progress is a function of *continual* investments in our people, systems and products, in good and bad times, to build our capabilities. Whether looking

Earnings, Diluted Earnings per Share and Return on Tangible Common Equity 2004–2020

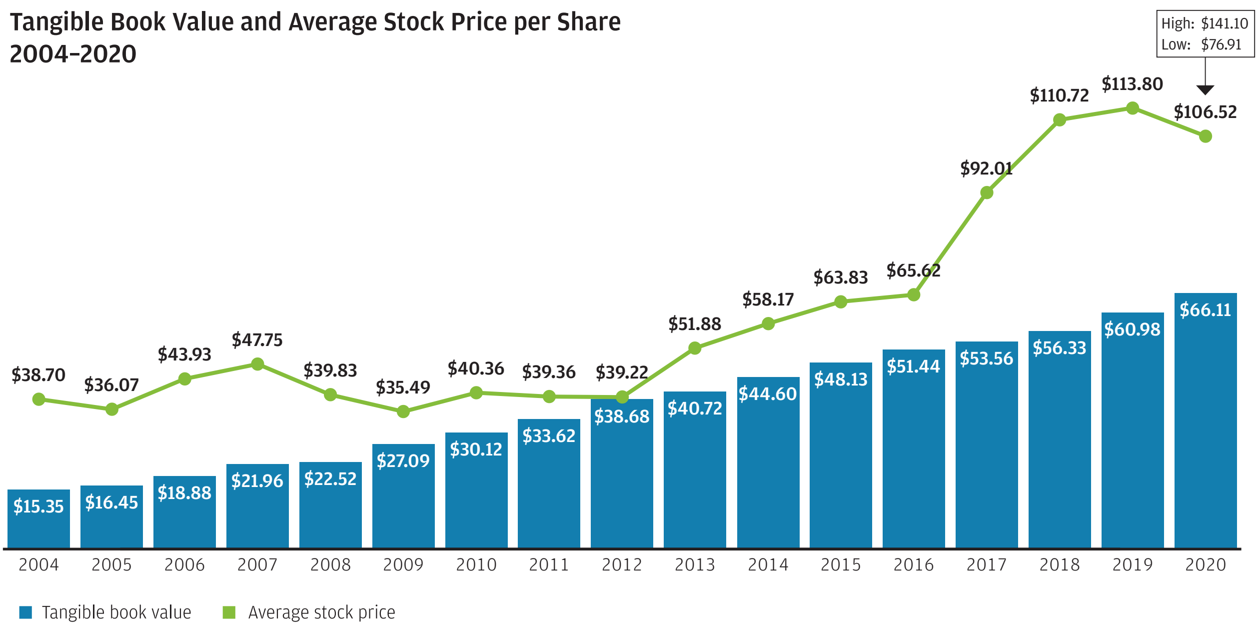
($ in billions, except per share and ratio data)



Year	Net income	Diluted earnings per share	ROTCE
2004	$4.5	$1.52	10%
2005	$8.5	$2.35	15%
2006	$14.4	$4.00	24%
2007	$15.4	$4.33	22%
2008	$5.6	$1.35	6%
2009	$11.7	$2.26	10%
2010	$17.4	$3.96	15%
2011	$19.0	$4.48	15%
2012	$21.3	$5.19	15%
2013	$17.9	$4.34	11%
2014	$21.7	$5.29	13%
2015	$24.4	$6.00	13%
2016	$24.7	$6.19	13%
2017	$24.4	$6.31	12%
2018	$32.5	$9.00	17%
2019	$36.4	$10.72	19%
2020	$29.1	$8.88	14%

1 Adjusted net income, a non-GAAP financial measure, excludes $2.4 billion from net income in 2017 as a result of the enactment of the Tax Cuts and Jobs Act.

Tangible Book Value and Average Stock Price per Share 2004–2020



Year	Tangible book value	Average stock price
2004	$15.35	$38.70
2005	$16.45	$36.07
2006	$18.88	$43.93
2007	$21.96	$47.75
2008	$22.52	$39.83
2009	$27.09	$35.49
2010	$30.12	$40.36
2011	$33.62	$39.36
2012	$38.68	$39.22
2013	$40.72	$51.88
2014	$44.60	$58.17
2015	$48.13	$63.83
2016	$51.44	$65.62
2017	$53.56	$92.01
2018	$56.33	$110.72
2019	$60.98	$113.80
2020	$66.11	$106.52

Stock total return analysis

	Bank One	S&P 500 Index	S&P Financials Index
Performance since becoming CEO of Bank One (3/27/2000–12/31/2020)[1]			
Compounded annual gain	11.9%	6.5%	4.1%
Overall gain	928.1%	268.0%	128.8%

	JPMorgan Chase & Co.	S&P 500 Index	S&P Financials Index
Performance since the Bank One and JPMorgan Chase & Co. merger (7/1/2004–12/31/2020)			
Compounded annual gain	10.4%	9.7%	3.7%
Overall gain	412.0%	362.0%	82.3%
Performance for the period ended December 31, 2020			
Compounded annual gain/(loss)			
One year	(5.5)%	18.4%	(1.8)%
Five years	17.2%	15.2%	11.1%
Ten years	14.7%	13.9%	10.8%

These charts show actual returns of the stock, with dividends reinvested, for heritage shareholders of Bank One and JPMorgan Chase & Co. vs. the Standard & Poor's 500 Index (S&P 500 Index) and the Standard & Poor's Financials Index (S&P Financials Index).

1 On March 27, 2000, Jamie Dimon was hired as CEO of Bank One.

back over five years, 10 years or since the JPMorgan Chase/Bank One merger (approximately 15 years ago), these investments mean our stock has significantly outperformed the Standard & Poor's 500 Index and the Standard & Poor's Financials Index. These important investments will also drive our company's future prospects and position it to grow and prosper for decades.

We have consistently described to you, our shareholders, the basic principles and strategies we use to build this company — from maintaining a fortress balance sheet, constantly investing, nurturing talent, fully satisfying regulators, and continually improving risk, governance and controls to serving customers and clients while lifting up communities worldwide.

Adhering to these principles allows us to drive good organic growth and properly manage our capital (including dividends and stock buybacks), which we have consistently demonstrated over the past decades. All of this is shown in the charts in this introduction. In addition, we urge you to read the CEO letters in this Annual Report, which will give you a lot more specific detail about our businesses and what our plans are for the future.

Client Franchises Built Over the Long Term

Consumer & Community Banking

	2006	2019	2020
Active digital customers (M)	4.9	52.5	55.3
Active mobile customers (M)	–	37.3	40.9
Active mobile customers growth rate	NM	12%	10%
% of digital payment transactions[1]	<25%	64%	72%
% of digital payment volume[1]	<30%	58%	62%
# of branches	3,079	4,976	4,908
Average Consumer Banking deposits ($B)[2]	$152	$548	$657
Average Business Banking deposits ($B)	$37	$136	$175
Average Consumer & Business Banking deposits ($B)	$189	$684	$833
Average Business Banking loans ($B)	$13	$24	$38
Client investment assets ($B)	~$80	$501	$590
Deposits market share[3]	3.6%	9.3%	9.8%
# of top 50 Chase markets where we are #1 (top 3)	11 (25)	14 (40)	14 (41)
Business Banking primary market share[4]	5.1%	9.4%	9.5%
Credit card sales ($B)	$257	$763	$703
Debit card sales ($B)	NA	$352	$379
Debit & credit card sales volume ($B)	NA	$1,114	$1,081
Credit card loans ($B, EOP)	$153	$169	$144
Credit card sales market share[5]	16%	22%	22%

- Serve >63 million U.S. households including 4.3 million small business relationships
- 55 million active digital customers[6], including 41 million active mobile customers[7]
- #1 primary bank within Chase footprint[8]
- #1 U.S. credit card issuer based on sales and outstandings[9]
- #4 mortgage servicer[10]
- #2 bank auto lender[11]
- Provided customer assistance to ~2.0M accounts, representing balances of ~$83B[12]
- #1 PPP lender on a dollar basis

Corporate & Investment Bank

	2006	2019	2020
Global investment banking fees[13]	#2	#1	#1
Market share[13]	8.7%	8.9%	9.2%
Total Markets revenue[14]	#8	#1	#1
Market share[14]	6.3%	11.4%	12.9%
FICC[14]	#7	#1	#1
Market share[14]	7.0%	11.6%	13.1%
Equities[14]	#8	co-#1	co-#1
Market share[14]	5.0%	11.0%	12.3%
Assets under custody ($T)	$13.9	$26.8	$31.0
Average deposits ($B)[15]	$190	$465	$611
Daily payment processing ($T)[16]	NA	>$7	>$8
Average daily security purchases and sales ($T)	NA	$2.3	$2.7
Average total deposits ($B)	NA	$516	$655

- >80% of Fortune 500 companies do business with us
- Presence in over 100 markets globally
- #1 in global investment banking fees for the 12th consecutive year[13]
- Consistently ranked #1 in Markets revenue since 2012[14]
- J.P. Morgan Research ranked as the #1 Global Research Firm[17]
- #1 in USD payments volume[18]
- #2 custodian globally[19]

Commercial Banking

	2006	2019	2020
# of top 75 MSAs with dedicated teams	36	67	67
Bankers	1,203	2,101	2,020
New relationships (gross)	NA	1,706	1,856
Average loans ($B)	$53.6	$207.9	$218.9
Average deposits ($B)	$73.6	$172.7	$237.8
Gross investment banking revenue ($B)[20]	$0.7	$2.7	$3.3
Multifamily lending[21]	#28	#1	#1

- 137 locations across the U.S. and 30 international locations
- Credit, banking and treasury services to ~18K Commercial & Industrial clients[22] and ~33K real estate owners and investors
- 17 specialized industry coverage teams
- #1 traditional Middle Market Bookrunner in the U.S.[23]
- 23,000 affordable housing units financed in 2020[24]

Asset & Wealth Management

	2006	2019	2020
U.S. Private Bank (*Euromoney*)[25]	#1	#1	#1
Ranking of 5-year cumulative net client asset flows[26]	NA	#2	#2
China inbound funds AUM[27]	NA	#6	#3
Global Funds AUM ($T)	$0.3	$0.6	$0.8
Global active long-term fund AUM market share[28]	1.8%	2.5%	2.7%
Global Institutional AUM ($T)	$0.5	$1.1	$1.3
Global Private Bank client assets ($T)[29, 30]	$0.5	$1.4	$1.6
U.S. ultra-high-net-worth client assets market share[31]	NA	11%	12%
Average loans ($B)[29]	$26.5	$147.4	$166.3
Average deposits ($B)[29]	$50.6	$135.3	$162.0
# of Global Private Bank client advisors[29, 30]	1,506	2,419	2,462

- 80% of 10-year JPMAM long-term mutual fund AUM performed above peer median[32]
- 183 4/5-star rated funds[33]
- Business with 56% of the world's largest pension funds, sovereign wealth funds and central banks
- Positive client asset flows across all regions, segments and products
- 63% of Asset Management AUM managed by female and/or diverse portfolio managers[34]

NM = Not meaningful
NA = Not available
FICC = Fixed Income, Currencies and Commodities
MSAs = Metropolitan statistical areas

USD = U.S. dollar
EOP = End of period
PPP = Paycheck Protection Program
AUM = Assets under management

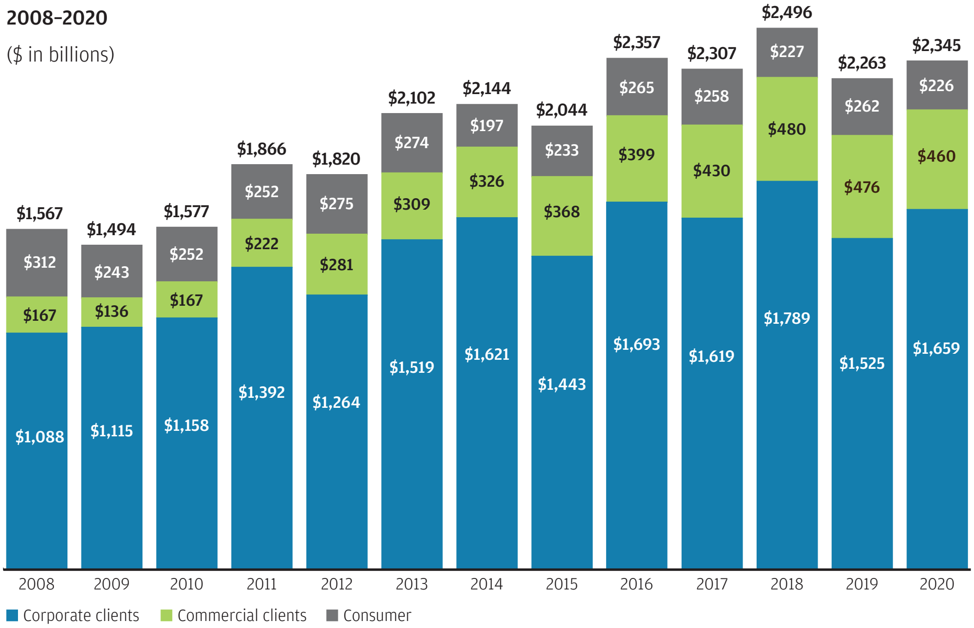
B = Billions
T = Trillions
M = Millions
K = Thousands

For footnoted information, refer to page 67 in this Annual Report.

New and Renewed Credit and Capital for Our Clients

2008–2020

($ in billions)

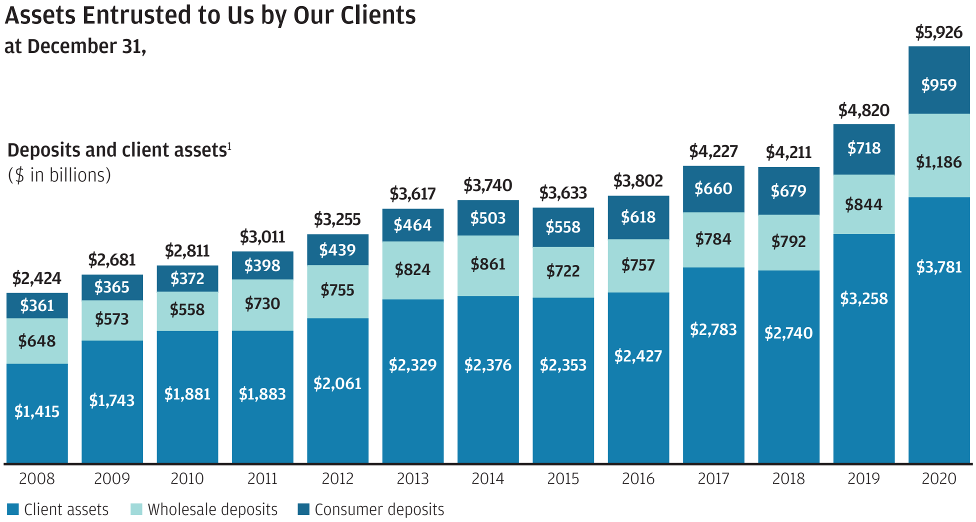


Assets Entrusted to Us by Our Clients

at December 31,

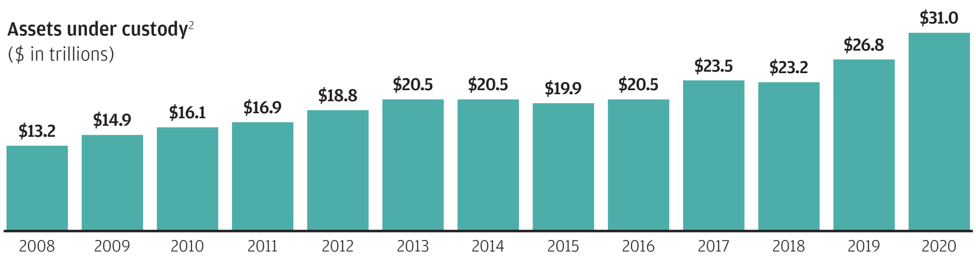
Deposits and client assets[1]

($ in billions)



Assets under custody[2]

($ in trillions)

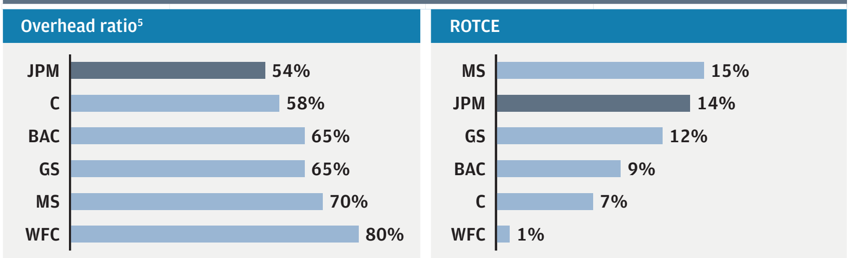


1 Represents assets under management, as well as custody, brokerage, administration and deposit accounts.
2 Represents activities associated with the safekeeping and servicing of assets.

JPMorgan Chase Is in Line with Best-in-Class Peers in Both Efficiency and Returns

	Efficiency		Returns	
	JPM 2020 overhead ratio	Best-in-class peer overhead ratio[1]	JPM 2020 ROTCE	Best-in-class peer ROTCE[2, 3]
Consumer & Community Banking	**55%**	**49%** COF-CB & DC	**15%**	**17%** BAC-CB
Corporate & Investment Bank	**48%**	**53%** C-ICG	**20%**	**16%** MS-IS
Commercial Banking	**41%**	**39%** USB-C & CB	**11%**	**15%** PNC
Asset & Wealth Management	**70%**	**60%** CS-PB & TROW	**28%**	**34%** UBS-GWM & MS-IM

JPMorgan Chase compared with peers[4]



ROTCE = Return on tangible common equity

For footnoted information, refer to page 67 in this Annual Report.

Our Fortress Balance Sheet

at December 31,

	2008		2020	
CET1	7.0%[1]	+610 bps	13.1%[2]	2020 Basel III Advanced is 13.8%, or 18.7%, excluding $385B of operational risk RWA[3]
Tangible common equity	$84B	+$118B	$202B	
Total assets	$2.2T	+$1.2T	$3.4T	
RWA	$1.2T[1]	+$0.4T	$1.6T[2]	2020 Basel III Advanced is $1.5T, including $385B of operational risk RWA[3]
Liquidity	~$300B	+~$1,137B	$1,437B	>~$450B of cash, ~$400B of UST, and ~$250B of US agency securities; reported HQLA is $697B[4]

1 CET1 and RWA reflect the Tier 1 common ratio and risk weighted assets under the Basel I measures.

2 Reflects the Basel III Standardized measure, which is the firm's current binding constraint.

3 Operational risk RWA is a component of RWA under the Basel III Advanced measure.

4 Represents quarterly average HQLA included in the liquidity coverage ratio. Total reported eligible HQLA excludes average excess eligible HQLA at JPMorgan Chase Bank, N.A. that are not transferable to nonbank affiliates. Refer to Liquidity coverage ratio on page 103 for additional information.

B = Billions
T = Trillions
bps = basis points

CET1 = Common equity Tier 1 ratio. Refer to Regulatory capital on pages 92-98 for additional information

RWA = Risk-weighted assets

Liquidity = HQLA plus unencumbered marketable securities, includes excess liquidity at JPMorgan Chase Bank, N.A.

HQLA = High-quality liquid assets include cash on deposit at central banks and high-quality liquid securities as defined in the LCR rule (predominantly U.S. Treasuries, U.S. government-sponsored enterprises and government agency mortgage-backed securities, and sovereign bonds)

LCR = Liquidity coverage ratio

UST = United States Treasuries

If you look deeper, you will find that our success and accomplishments are founded on our commitment to our shareholders. Shareholder value can be built only if you maintain a healthy and vibrant company, which means doing a good job taking care of your customers, employees and communities. Conversely, how can you have a healthy company if you neglect any of these stakeholders? As we have learned in 2020, there are myriad ways an institution can demonstrate its compassion for its employees and its communities while still upholding shareholder value.

Ultimately, the basis of our success is our people. They are the ones who serve our customers and communities, build the technology, make the strategic decisions, manage the risks, determine our investments and drive innovation. Whatever your view is of the world's complexity and the risks and opportunities ahead, having a great team of people — with guts and brains and enormous capabilities who can navigate personally challenging circumstances while dedicating themselves to professional excellence — is what ensures our prosperity, now and in the future.

Within this letter, I discuss the following:

Business Roundtable's Statement on the Purpose of a Corporation

In August 2019, Business Roundtable released the below Statement on the Purpose of a Corporation, signed by 181 CEOs, including Jamie Dimon, then chair of the association. This statement repositioned the definition of corporate success as serving shareholders principally to endorsing a modern standard of corporate responsibility: to serve all stakeholders — customers, employees, suppliers, communities and shareholders.

Americans deserve an economy that allows each person to succeed through hard work and creativity and to lead a life of meaning and dignity. We believe the free-market system is the best means of generating good jobs, a strong and sustainable economy, innovation, a healthy environment and economic opportunity for all.

Businesses play a vital role in the economy by creating jobs, fostering innovation and providing essential goods and services. Businesses make and sell consumer products; manufacture equipment and vehicles; support the national defense; grow and produce food; provide health care; generate and deliver energy; and offer financial, communications and other services that underpin economic growth.

While each of our individual companies serves its own corporate purpose, we share a fundamental commitment to all of our stakeholders. We commit to:

- Delivering value to our customers. We will further the tradition of American companies leading the way in meeting or exceeding customer expectations.
- Investing in our employees. This starts with compensating them fairly and providing important benefits. It also includes supporting them through training and education that help develop new skills for a rapidly changing world. We foster diversity and inclusion, dignity and respect.
- Dealing fairly and ethically with our suppliers. We are dedicated to serving as good partners to the other companies, large and small, that help us meet our missions.
- Supporting the communities in which we work. We respect the people in our communities and protect the environment by embracing sustainable practices across our businesses.
- Generating long-term value for shareholders, who provide the capital that allows companies to invest, grow and innovate. We are committed to transparency and effective engagement with shareholders.

Each of our stakeholders is essential. We commit to deliver value to all of them, for the future success of our companies, our communities and our country.

Released: August 19, 2019

I. THE CORPORATE CITIZEN: THE PURPOSE OF A CORPORATION

We need to build and maintain a healthy and vibrant company, over the long run, to be able to deal with the uncertainties of life, to invest, to innovate and to grow. To be healthy and vibrant, a company must do many things well: It must do a great job for customers; attract, develop and retain talented employees; and serve its communities.

It is vital that we do all of these things, as the failure to perform any one of them with excellence could lead to the failure of all. Over the years, we have extensively described the efforts we make to take care of our customers and our employees. The purpose of this section is to describe our corporate responsibility efforts in more detail and explain their importance.

To be healthy and vibrant – and to create long-term shareholder value – a company must be financially successful ***over the long run***.

The problem with the American public's impression of "shareholder value" is that too many people interpret it to mean short-term, rapacious profit taking – which, ironically, is the last thing that leads to building real, long-term shareholder value. And when they hear the word "fiduciary," they think we are standing behind our lawyers.

Obviously, companies have fiduciary responsibilities. However, legal and fiduciary language does not represent how most CEOs and boards actually run their companies. We should not be buttonholed by the debate about whether there are "fiduciary" reasons to think of "shareholder value" narrowly and to the exclusion of those who work at the company, our clients and communities. When most CEOs and board members wake up each morning, they worry about all of the things that they need to do right to build a successful company. A company is like a team. We must do many things well to succeed, and, ultimately, that leads to creating shareholder value.

1. Businesses must earn the trust of their customers and communities by acting ethically and morally.

To a good company, its reputation is everything. That reputation is earned day in and day out with every interaction with customers and communities. This is not to say that companies (and people) do not make mistakes – of course they do. Often a reputation is earned by how you deal with those mistakes.

While all businesses are different, there are some fundamentals: good products, fair and transparent pricing, thoughtful and responsive service, and continuous innovation. Great companies constantly set high standards, acknowledge their mistakes and properly discipline or dismiss bad actors.

Great companies are strict about having fair dealings with their customers. I have always loved that Home Depot's company policy is not to raise lumber prices in the immediate aftermath of a hurricane, regardless of whether it can. (I want to remind readers that banks essentially did not raise the price of credit when they renewed loans during the financial crisis.) Pricing to customers should be what's fair – not what a company can get away with.

Banks, in particular, have to be rigorous about standards. Unlike many companies that will simply sell you a product if you can pay for it, banks must necessarily turn customers down or enforce rules that a customer may not like (for example, covenants). This makes open and transparent dealings even more important. When I hear examples of people doing something that is wrong because they could be paid more, it makes my blood boil – and I don't want them working here. And I can't believe it when I hear about a company, or a hedge fund, causing loans and a company to default so they can trigger credit default swap hedges – it's completely unethical.

We must always strive, particularly in tough times, to earn the trust of our customers and communities.

2. Being a responsible community citizen locally is critical, and it is easy to understand why.

If you live in a small town and run a corner bakery, it is very easy to understand the value of being a responsible community citizen. Most businesses on "Main Street" keep the sidewalk in front of their store clean so people don't slip and fall. They often participate in the community by supporting local sports teams or religious institutions. A bakery or a restaurant will often donate surplus food at the end of the day to a local homeless shelter. Most businesses understand that everyone doing their part to make the community a better place is both the moral thing to do and a driver of better commercial outcomes for the town.

When JPMorgan Chase enters a community, we take great pride in being a responsible citizen at the local level – just like the local bakery. We lend to and support local businesses. We help customers with banking, lending and saving. And our local corporate responsibility efforts and philanthropic programs (examples of which are described in the following features in this section) help make these communities stronger.

3. Being a responsible community citizen nationally, or globally, is more critical and more complex.

Most people consider corporate responsibility to be merely enhanced philanthropy. This is understandable. But it is far harder to understand what being a responsible community citizen means in terms of macro corporate responsibility. While we are devoted to philanthropy – we spend $330 million a year on these efforts – corporate responsibility is far more than that.

JPMorgan Chase takes an active role in large-scale public policy issues. We are fully engaged in trying to solve some of the world's biggest issues – climate change, poverty, economic development and racial inequality – and the accompanying features that follow describe the extensive efforts we are making. With well-designed policies, we think these problems can all be solved. In the last section of this letter, I detail certain policy issues, which – if forcefully and effectively addressed – would be great for America and the world at large. We engage at this level because companies (like ours) have an extraordinary capability to help. We help not just with funding but with developing strong public policy, which can have a greater impact on society than the collective effect of companies that are responsible community citizens locally. This year, for example, our *Policy*Center published research based on the actual experiences of our customers and communities, showing how new policies could drive a more inclusive economic recovery and help small businesses. JPMorgan Chase has always recognized that long-term business success depends on community success, and that is one of the reasons for our enduring achievement. When everyone has a fair shot at participating – and sharing – in the rewards of growth, the economy will be stronger, and our society will be better.

We also believe that businesses' extraordinary capabilities are even more powerful when put to use in collaboration with governments' capabilities, particularly when seeking to solve our biggest economic and societal ills at the local level. As Washington, D.C., and central governments around the world struggle with partisan gridlock and an inability to get big things done, local communities are coming up with some of the best ideas to make civic society work for more people. Mayors, governors, educators, major employers, entrepreneurs, community leaders and nonprofits are making serious progress developing innovative approaches that address our greatest challenges, but their work often flies under the radar. We must elevate these thoughtful ideas and find ways to share them with others facing similar situations, enabling more communities to benefit from proven, localized solutions. After businesses have had success with some of these efforts locally, they can be adopted across the country and, in fact, around the world.

Our effort is substantial and permanent and has support throughout the company.

Importantly, these civic efforts are supported by senior leadership and are managed by some of our best people (these initiatives are not an afterthought and are sustainable). For our part, we are making significant, long-term, data-driven business and philanthropic investments. And while we try to be creative, we analyze everything, including philanthropy, based on measurable results.

Executing Our Corporate Purpose

We go to great lengths to be there for our clients, customers, employees and communities. Moreover, this unwavering commitment has been a hallmark of our company since its founding. During this time of corporate self-reflection, it's important to understand and reaffirm the magnitude of our contributions.

Helping Clients and Customers in 2020

- We extended credit and raised capital totaling $2.3 trillion for consumers and clients of all sizes around the world, including some of the industries and communities most affected by the pandemic's economic fallout. This includes critical financing for companies such as Boeing and its 145,000 employees. J.P. Morgan helped them raise $25 billion to help fund their ongoing operations as the pandemic led to less air travel.
- We provided consumers with $226 billion in credit to help them afford some of their most important purchases, including new homes and vehicles. This included more than $32 billion to help customers in underserved communities purchase a new home.
- We raised $1.1 trillion in capital for corporations and non-U.S. government entities and offered $865 billion in credit for corporations. For example, we helped Meals on Wheels build a new 36,000-square-foot commercial kitchen and food production facility to help maintain good nutritional health of older adults with limited financial resources.
- We raised $103 billion in credit and capital for nonprofit and U.S. government entities, including states, cities, hospitals and universities. This included funding for NewYork-Presbyterian Health System – which saw a significant increase in patients as a result of COVID-19 – to help them acquire vital medical supplies and equipment and to bring on additional staff.

- We committed more than $45 billion in lending and investments to support community development, affordable housing and small business growth in underserved communities across the United States. This included Eden Housing, a nonprofit that provides low-income residents with safe, modern and affordable housing in California's Bay Area.

- We provided more than $18 billion in credit to small businesses around the country, as well as more than $32 billion in funding ($28 billion excluding Small Business Administration (SBA) safe harbor refunds) under the SBA's Paycheck Protection Program (PPP). For example, we helped Kids Klub Child Development Centers — which offer preschool, daycare and after-school programming — revamp their centers to enable care for essential workers' children.

- We provided critical development financing and attracted additional investment, such as funding through our new development finance institution (DFI) to support sustainable development. In 2020, the DFI mobilized $140 billion toward these goals — helping, for example, with Uzbekistan's first local currency issuance in international markets to finance the country's health, education and transport sectors and with the Republic of Georgia's debut green bond to support that country's access to water, power and sanitation.

- We raised $12 billion in capital and credit to help finance infrastructure projects across the United States. This included $1.3 billion in credit assistance to New York City's Metropolitan Transportation Authority to help deal with the serious impacts of COVID-19 on the city's transportation system and $800 million in capital for Michigan's Department of Transportation to help rebuild the state's roads and bridges.

- We designed branches, products, services and digital solutions to help clients and customers better manage their financial daily lives, with particular focus on underserved communities and families. Examples include low-cost, low-fee accounts, such as Chase Secure Banking℠, and financial tools, such as Chase Credit Journey and Chase Autosave. In 2020, we continued to open new branches in new markets across the United States with 30% opening in low- to moderate-income communities by 2023.

Helping Communities

- We have supported and continue to support a range of community initiatives — from assisting underserved small businesses outside of Paris to facilitating skills training for high-growth jobs in India to helping residents of Harlem increase savings and reduce debt. In 2020, we provided more than $500 million in low-cost loans, equity and philanthropic grants to address immediate needs brought on by the COVID-19 crisis, drive an inclusive recovery and advance racial equity. These efforts will help 1.3 million individuals receive financial coaching, enable 172,000 people to enroll in jobs and skills training programs, assist 64,000 underserved small businesses and create or preserve 43,000 affordable housing units.

- We have committed employee time and talent to tackling communities' greatest challenges. In 2020, employees participated in nearly 50 Service Corps programs to help local nonprofits; mentored hundreds of Black and Latinx young men as part of The Fellowship Initiative; and supported local organizations focused on racial equity.

- We are dedicated to addressing climate change and sustainability around the world. In 2020, the firm committed to finance and facilitate $200 billion to drive action on climate change and advance sustainable development, including renewable energy, cleaner water and waste management; improve access to housing, education and healthcare; and promote infrastructure, innovation and growth around the globe.

Supporting Employees

- We have taken extensive steps to support our employees, who are our greatest strength. We offer 300 accredited skills and education programs and have helped 15,000 employees (to date) assess their skills, which may lead to opportunities for career mobility at the firm. And we have been increasing wages for thousands of employees, including branch and customer service employees, to between $16 and $20 an hour, depending on where they work in the United States, while providing an annual benefits package worth about $13,000.
- As part of our strategy to diversify our talent pipeline, we have implemented a range of changes to expand opportunities for individuals with a criminal background. In 2020, we hired approximately 2,100 people with a criminal background — roughly 10% of our new hires in the United States. And through the JPMorgan Chase *Policy*Center, we are advancing federal and state policies that help qualified workers with an arrest or conviction record compete for employment in federal agencies and with federal contractors. We are reforming Federal Deposit Insurance Corporation (FDIC) hiring rules and setting up automatic record clearing for eligible offenses to help individuals move on from their record. We also supported a measure signed into federal law in 2020 restoring access to Pell Grants for incarcerated individuals, which allows them to pursue postsecondary education in prison and increase employment opportunities after their release.

Our $30 Billion Path Forward Commitment

JPMorgan Chase introduced The Path Forward in October 2020, committing $30 billion over the next five years to address the key drivers of the racial wealth divide, reduce systemic racism against Black and Latinx people, and support employees. The firm has made tangible progress to date.

Promote and expand affordable housing and homeownership for underserved communities

- **Helping Black and Latinx families buy homes and refinance loans:** Our Home Lending business has committed to helping an additional 40,000 Black and Latinx families buy a home over the next five years, with the firm dedicating $8 billion in mortgages for this purpose. The firm is committing up to $4 billion in refinancing loans to help an additional 20,000 Black and Latinx households achieve lower mortgage payments. In addition, the firm is working to improve key home lending products and offerings: A $5,000 grant, for example, will help cover closing costs and down payments for people buying a home in 6,700 minority communities in the United States.
- **Expanding affordable housing in underserved communities:** The firm's inaugural $1 billion social bond builds on its strategy to use its business expertise to create opportunity for underserved communities. The bond's co-managers solely comprise minority- and women-owned businesses, as well as service-disabled, veteran-owned firms.

Grow Black- and Latinx-owned businesses

- **Helping small businesses thrive:** A $350 million, five-year global commitment underscores our dedication to grow Black-, Latinx- and women-owned businesses among other underserved small businesses, help address the racial wealth divide and create a more inclusive recovery from the COVID-19 pandemic. This ambitious endeavor combines low-cost loans, equity investments and philanthropy and will help reduce barriers to capital for underserved small businesses to support their immediate needs and long-term growth. As part of this commitment, the firm is investing $42.5 million in low-cost loans and philanthropy to expand the Entrepreneurs of Color Fund to more cities in the United States, in collaboration with Local Initiatives Support Corporation and a network of community development financial institutions (CDFI).
- **Investing in middle-market businesses:** The firm is co-investing up to $200 million alongside Ariel Alternatives and Project Black, an initiative that aims to close the racial wealth gap by investing in middle-market businesses that are minority-owned — or will become minority-owned — to develop a new class of Black and Latinx entrepreneurs.
- **Expanding our business with Black and Latinx suppliers:** The firm's internal Buy Black and Latinx Portal, led by Advancing Black Pathways, encourages our lines of business to purchase goods and services from diverse businesses. This year-long campaign is designed to support the firm's commitment to spend $750 million with Black- and Latinx-owned suppliers over the next five years.

Improve financial health and access to banking in Black and Latinx communities

- **Helping 1 million people open low-cost checking or savings accounts:** Chase will open 16 new community branches in traditionally underserved neighborhoods and hire 150 community managers by 2022. Branches in Chicago, Dallas, Minneapolis and New York (Harlem) have already been redesigned under this new model. This model has expanded outreach to local small businesses — and to consumers with financial education — and serves as a hub for overall community engagement. Another 100 new branches are being opened in low- to moderate-income communities across the United States as part of the firm's market expansion initiative. We want to build trust in the communities we serve and become our customers' primary bank. We offer Secure Banking — a low-cost, no overdraft checking account — for those new to banking, those who have had trouble getting or keeping a bank account, and for Black and Latinx unbanked and underbanked households, thereby expanding access to traditional banking.
- **Strengthening diverse-led financial institutions:** To promote financial institutions in underserved neighborhoods, we are providing additional access to capital, connections to institutional investors through new products and services, specialty support for Black-led commercial projects, and mentorship and training opportunities. In October 2020, the firm committed to investing $50 million in Black- and Latinx-led minority depository institutions and CDFIs. With $40 million of that investment already committed or deployed to Louisiana-based Liberty Bank, North Carolina-based M&F Bank, New York-based Carver Federal Savings Bank and Los Angeles-based Broadway Federal Bank, the total investment has been increased to $75 million, which could generate access to as much as $750 million in community lending. In addition, the firm's new Empower money market share class will allow these institutions to develop new revenue streams by serving institutional clients.

Our Sustainability Efforts

Climate change is a critical issue of our time. Reducing greenhouse gas (GHG) emissions — the main cause of climate change — requires collective ambition and cooperation across the public and private sectors.

Coal, oil and natural gas — the primary sources of GHG emissions — have powered the world's energy economy for many decades, advancing significant economic growth and social development for billions around the world. But our reliance on these resources now threatens the very growth they have enabled.

The challenge we face is significant. While continuing to generate power for all of our needs, big and small — lighting and heating our homes, commuting to work, and charging our phones and computers, as well as operating manufacturing facilities that produce goods used around the world each day — we also need to bring energy to the nearly 800 million people who still don't have reliable access to electricity. And we need to find a way to do all of these things while setting a path for achieving net-zero emissions by 2050.

The fact is we're long past debating whether climate change is real. But we need to acknowledge that the solution is not as simple as walking away from fossil fuels. We will need resources such as oil and natural gas until commercial, affordable and low-carbon alternatives can be developed to meet all of our global energy needs. This is where business and government leaders need to focus their time and attention.

While wind and solar technologies have made huge strides, they're principally deployed for electricity generation. We don't have clean alternatives for industrial and manufacturing energy needs, for example. Nor do we yet have solutions for heavy transportation, such as trucking and air travel. What's more, the projected growth of technologies like electric vehicles is going to place huge pressures on the need for rare earth minerals — which also presents geopolitical and environmental challenges.

Policymakers have taken some important steps.

The Paris Agreement is one such success, but we must put a price on carbon. A carbon tax (with a commensurate carbon dividend – directly returned to the people) is an excellent way to dramatically reduce carbon while investing in communities most adversely affected by this much-needed transition. Without a benchmark like this, businesses and economies won't be able to properly factor the cost of carbon and the benefit of alternatives into their long-term strategic planning and capital investment decisions.

Companies are figuring out how to manage amid these challenges. And many are also dealing with a growing chorus of pressure from customers, regulators, shareholders and activists with strong perspectives on how corporations and other institutions should address climate change.

When we cut through all the noise, here's what we know to be true:

Traditional energy resources play an essential role in our global economy today. We can agree on the need to make our energy system much less carbon intensive. But abandoning companies that produce and consume these fuels is not a solution. Furthermore, it's economically counterproductive. Instead, we must work with them.

There's huge opportunity in sustainable and low-carbon technologies and businesses. While many of these technologies and companies are mature, many more are just getting started — and more will need to be created in the coming decades. In addition, all companies will need capital and advice to help them innovate, evolve and become more efficient while staying competitive in a changing world.

This is why we made a commitment in 2020 to align our financing activities in three carbon-intensive sectors — oil and gas, electric power and automotive manufacturing — with the Paris Agreement.

To do so, we will measure our clients' carbon performance against sector-based GHG reduction targets that we're setting for 2030 — with the goal of helping them reduce emissions from their direct operations and, in the case of oil and gas and automotive companies, reduce GHGs from the use of their products.

The key metric we plan to use for evaluating climate performance is carbon intensity, which is a measure of GHG emissions per unit of output. Using intensity will enable us to evaluate the relative efficiency of companies and to adjust for factors such as size, clearly showing which are performing the best (or getting better).

We also want to take advantage of the huge opportunity to support existing and new green companies and to help others lower their carbon footprint — all while advancing economic development and standards of living for people around the world. This includes helping our clients invest in significant and continuous performance improvements, new technologies, alternative energy solutions, and research and development (R&D). Through our recently launched Center for Carbon Transition, clients will have access to information resources, as well as advisory and financing solutions that will help them evolve in a changing world.

We're also working to make our own company as sustainable as possible. We've committed to becoming carbon neutral for the emissions generated to power our buildings, branches and data centers, as well as those related to employee travel. A big focus of our strategy is to generate our own power using solar.

Currently, we have plans to install 40 megawatts of solar capacity across our corporate office buildings in the United States and the United Kingdom. This includes a 14.8-megawatt rooftop and carport solar installation at our corporate campus in Columbus, Ohio, which will produce about 75% of its power needs. We're also installing 30 megawatts of solar capacity at 900 retail branch locations across the United States, which will provide approximately 35% of each branch's power needs.

We have an opportunity to make the world a better place for ourselves, for our children and grandchildren, and for all living things that share this planet with us.

II. LESSONS FROM LEADERSHIP

Great management is critical to the long-term success of any large organization. Strong management is disciplined and rigorous. Facts, analysis, detail … facts, analysis, detail … repeat. You can never do enough, and it does not end. Complex activity requires hard work and no uneducated guesswork. Test, test, test and learn, learn, learn. And accept failure as a "normal" recurring outcome. Develop great models but understand they are not the answer – judgment has to be involved in matters related to human beings and extraordinary events. You need to have good decision-making processes. Force urgency and kill complacency. Know that there is competition everywhere, all the time. But even if you do all of this well, it is not enough.

1. Enforce a good decision-making process.

A good decision-making process involves having the right people in the room with all information fully shared (all too often I have seen precisely the opposite). There is also the need for constant feedback and follow-up. A bad decision-making process kills. If necessary, review the information over and over – often the answer is simply waiting to be found – and if you don't have to, don't rush. While intuition matters, and it can be the final deciding factor, intuition is not guessing – it is usually based on years of experience, hard work and practice.

2. Examine raw data and focus on real numbers.

It is helpful to try to separate and examine actual raw data versus calculated numbers. A few examples will suffice:

You always learn a lot more when you dig deep into the numbers. Look at total car sales, the number of people employed or the actual price of goods compared with calculated data like gross domestic product (GDP), inflation or productivity. For the latter, examine all of the methodologies and assumptions that go into those calculations. For instance, productivity tries to adjust for (or simply sometimes can't adjust for) new products that are superior to old products, such as smartphones versus dumb phones; similarly, calculations for inflation factor in something called "owners' equivalent rent," which generally differs substantially from actual home prices or rental costs.

Applied to corporate operations, examine the details. Many companies look at "net new accounts," which could be going up dramatically because of prices or marketing – masking attrition or consumers' dissatisfaction with the product. In detail, look at errors, complaints, attrition, competitors and other new entrants.

Look at market share by customer segment so as not to miss behavior shifts. Frequently, raw data tell a different story from what management may be saying: Too often management teams use the facts to justify what they already think or to celebrate what they believe is a great success.

Being true to these principles requires relentless discipline – which you should expect of us.

3. Understand when analysis is necessary and when it impedes change.

While I am fanatical about detail and multi-year analysis, it's important to be cautious about its application. Assumptions are frequently involved, and small changes in a few variables can dramatically change an outcome.

Even net present value analysis fails to capture the true value of something after a certain period of time. For instance, people commonly look at the five-year net present value of a customer acquisition, which can mask the true compounding effect of keeping that client for 20 years. And we have often seen net present value analysis fail to capture ancillary benefits (like customer happiness) that can often be more important than the analysis itself.

Sometimes a new product or an investment should simply be considered table stakes – meaning there's no need to do analysis at all. Think about banks adding the capability of opening new accounts digitally, for example, or maintaining a strong technology infrastructure and adopting new technologies, like cloud or artificial intelligence (AI). These could be life-or-death decisions for a company, so instead of focusing on net present value, the emphasis should be on getting the work done properly, efficiently and quickly.

Bureaucrats can torture people with analysis, stifling innovation, new products, testing and intuition.

In the last section, I go into further detail about how certain analyses fail to guide us to the right answer in public policy – particularly around complex issues like healthcare, job creation, mortgage markets and infrastructure.

4. Before conducting an important analysis, assess all factors involved.

I frequently see people trying to understand a complex situation without considering all the factors involved. In the final section, I attempt to analyze China as a strategic competitor. It's critical to weigh all the factors: cultural, psychological and historical. Also, what are the legal factors, and how is the rule of law applied? What is the country's situation with raw materials? What is the country's geography and relationship with its neighbors? It is important to lay out all the important variables *before* you start an assessment to ensure that they are all carefully reviewed and that one's judgment is not clouded early on by overfocusing on just a few issues.

In business, this type of assessment should also be applied to your competitors and to those you deem to be future competitors, as well as to your own strengths and weaknesses. In the next section, I describe the evolving competitive landscape for banks.

5. Always deal with reality.

In business, as in life, we must deal with both certainty and uncertainty. A simple look at history and our economic past illustrates the rather unpredictable nature of things. As a result, at the firm we try to look at all the possibilities, as well as their probabilities. For example, we conduct well over 100 stress tests each week to make sure we are prepared for what we are ***not*** predicting. We even evaluate the laws and regulations we live under today and project how they might be interpreted 10 years from now – we call this "reinterpretation risk." We look at a broad range of possibilities and probabilities to ensure that we understand, as best as we can, all of the possible outcomes – recognizing that we are not trying to make a forecast with certainty. Sometimes the action you take may not be the one that gives you the best outcome but the one that gives you a good outcome and reduces the possibilities of bad outcomes.

It also is often very difficult to capture the inflection points in the economy. Most people imagine the future as being roughly equivalent to the past, give or take a bit. However, we know there are significant inflection points, which are sometimes easy to see in hindsight but almost impossible to predict.

While we also try to keep things as streamlined as possible, making things simpler than they really are is equally flawed. Too many times people seek simple, cookie-cutter solutions that sound good but just don't work. For example, class size in schools matters but not necessarily in all types of classes. In Vietnam, when a major city once had a rat population problem, the government devised what it thought was an easy, foolproof solution: Pay people to kill rats. All people had to do was bring in a rat tail to be paid. What the government didn't consider was that people would breed rats for a supply of rat tails to sell. (All compensation schemes should be continuously re-evaluated.)

6. Remain open to learning how to become a better leader.

In addition to the above thoughts on analysis, assessment and good decision making, some softer leadership lessons are equally important.

As companies get bigger and more complex, leaders need to be more like coaches and conductors than players. If CEOs are running a smaller business, they can literally be involved in virtually everything and make most of the decisions – they often rely on traditional command-and-control tactics. This approach does not work as companies get bigger – the CEOs simply cannot be involved in every major decision. Command and constant feedback may be better than command and control. Here is where leaders would be better off providing clear direction and letting people do their job, including making mistakes along the way. Soft power – essentially trust and maturity – may become more important than hard power. Soft power creates respect among team members, with the coach offering honest assessment and support while allowing flexibility. Here the boss makes fewer but tougher decisions, such as removing people – when it must be done – and even then, it is handled respectfully. People will give to the best of their ability for leaders they respect and who they know are trying to help them succeed.

Respect and learn from your people. Managers and leaders get spread pretty thin. While they should have a wide grasp of many subjects, they could not possibly know everything their people know. Leaders should continually be learning from their people. They should go to a sales conference and ask lots of questions of their salespeople. Gather technology people in the room with branch managers and ask, "How are things working?" Taking a road trip should not be only for the purpose of showing the flag but also for learning from your employees and customers.

Have curiosity. It's important to ask questions to try to understand varying points of view. Be willing to change your mind. Read everything. Don't defend decisions of the past. Leaders should be happy when their people prove them wrong. Do not have a rigid mindset. And do not be complacent.

Skip hierarchy. If everything in a large organization must go up and down the hierarchical ladder, bureaucratic arteriosclerosis along with CYA sets in, and that company's life expectancy is substantially shortened. It should be routine that data, memos and ideas are shared – skipping hierarchies – and aren't vetted by all in the chain of command. This makes people more responsible for what they are doing, improves the dissemination of new information and new ideas, and speeds things up overall. In addition, it's good to have a few mavericks who are not afraid to shake things up. The ones who challenge authority or convention often get far more done than the ones who go along to get along. Collaboration is wonderful, but it can be overdone.

Act at the speed of relevance. When leaders have plenty of time to make decisions, they should analyze all factors over and over – take the necessary time, as choices can be hard to reverse. And there are other decisions that are more like "battlefield promotions" where there's no luxury of time, and, in fact, going slow may make things much worse. I've also seen people take a tremendous amount of time to make an unimportant decision, which just wastes time and slows things down.

In business, some decisions should be made carefully – for instance, putting the right people in the right job. But others, such as making pricing decisions, dealing with customer problems and handling reputational issues, must be done quickly, for these problems do not age well.

The Importance of Developing Leaders

Reprinted from my 2009 Letter to Shareholders

Earlier in this section, I mentioned that my number one priority is to put a healthy and productive succession process in place. As I will be increasingly focused on this process, I would like to share my thoughts about the essential qualities a leader must have, particularly as they relate to a large multinational corporation like JPMorgan Chase.

Leadership is an honor, a privilege and a deep obligation. When leaders make mistakes, a lot of people can get hurt. Being true to oneself and avoiding self-deception are as important to a leader as having people to turn to for thoughtful, unbiased advice. I believe social intelligence and “emotional quotient,” or EQ, matter in management. EQ can include empathy, clarity of thought, compassion and strength of character.

Good people want to work for good leaders. Bad leaders can drive out almost anyone who’s good because they are corrosive to an organization; and since many are manipulative and deceptive, it often is a challenge to find them and root them out.

At many of the best companies throughout history, the constant creation of good leaders is what has enabled the organizations to stand the true test of greatness – the test of time.

Below are some essential hallmarks of a good leader. While we cannot be great at all of these traits – I know I’m not – to be successful, a leader needs to get most of them right.

Discipline

This means holding regular business reviews, talent reviews and team meetings and constantly striving for improvement – from having a strong work ethic to making lists and doing real, detailed follow-up. Leadership is like exercise; the effect has to be sustained for it to do any good.

Fortitude

This attribute often is missing in leaders: They need to have a fierce resolve to act. It means driving change, fighting bureaucracy and politics, and taking ownership and responsibility.

High Standards

Leaders must set high standards of performance all the time, at a detailed level and with a real sense of urgency. Leaders must compare themselves with the best. Huge institutions have a tendency toward slowing things down, which demands that leaders push forward constantly. True leaders must set the highest standards of integrity – those standards are not embedded in the business but require conscious choices. Such standards demand that we treat customers and employees the way we would want to be treated ourselves or the way we would want our own mother to be treated.

Ability to Face Facts

In a cold-blooded, honest way, leaders emphasize the negatives at management meetings and focus on what can be improved (of course, it’s okay to celebrate the successes, too). All reporting must be accurate, and all relevant facts must be reported, with full disclosure and on one set of books.

Openness

Sharing information all the time is vital – we should debate the issues and alternative approaches, not the facts. The best leaders kill bureaucracy – it can cripple an organization – and watch for signs of politics, like sidebar meetings after the real meeting because people wouldn’t speak their mind at the right time. Equally important, leaders get out in the field regularly so as not to lose touch. Anyone in a meeting should feel free to speak his or her mind without fear of offending anyone else. I once heard someone describe the importance of having “at least one truth-teller at the table.” Well, if there is just one truth-teller at the table, you’re in trouble – everyone should be a truth-teller.

Setup for Success

An effective leader makes sure all the right people are in the room — from Legal, Systems and Operations to Human Resources, Finance and Risk. It's also necessary to set up the right structure. When tri-heads report to co-heads, all decisions become political — a setup for failure, not success.

Morale-Building

High morale is developed through fixing problems, dealing directly and honestly with issues, earning respect and winning. It does not come from overpaying people or delivering sweet talk, which permits the avoidance of hard decision making and fosters passive-aggressive behaviors.

Loyalty, Meritocracy and Teamwork

While I deeply believe in loyalty, it often is misused. Loyalty should be to the principles for which someone stands and to the institution: Loyalty to an individual frequently is another form of cronyism. Leaders demand a lot from their employees and should be loyal to them — but loyalty and mutual respect are two-way streets. Loyalty to employees does not mean that a manager owes them a particular job. Loyalty to employees means building a healthy, vibrant company; telling them the truth; and giving them meaningful work, training and opportunities. If employees fall down, we should get them the help they need. Meritocracy and teamwork also are critical but frequently misunderstood. Meritocracy means putting the best person in the job, which promotes a sense of justice in the organization rather than the appearance of cynicism: "Here they go again, taking care of their friends." Finally, while teamwork is important and often code for "getting along," equally important is an individual's ability to have the courage to stand alone and do the right thing.

Fair Treatment

The best leaders treat all people properly and respectfully, from clerks to CEOs. Everyone needs to help everyone else at the company because everyone's collective purpose is to serve clients. When strong leaders consider promoting people, they pick those who are respected and ask themselves, Would I want to work for him? Would I want my kid to report to her?

Humility

Leaders need to acknowledge those who came before them and helped shape the enterprise — it's not all their own doing. There's a lot of luck involved in anyone's success, and a little humility is important. The overall goal must be to help build a great company — then we can do more for our employees, our customers and our communities.

III. BANKS' ENORMOUS COMPETITIVE THREATS — FROM VIRTUALLY EVERY ANGLE

To fairly assess the competitive landscape for banks, you must fairly evaluate their strengths and weaknesses to deal with both the current competition and evolving competition. Banks have significant strengths – brand, economies of scale, profitability, and deep roots with their customers and within their communities. Many companies, including banks, have flaws of their own making – usually due to bureaucracy, complacency and lack of a deep competitive spirit. Banks have other weaknesses, born somewhat out of their success – for example, inflexible "legacy systems" that need to be moved to the cloud if they are to remain competitive. Banks are also required to deal with extensive regulations, which can hinder new competition and/or create an opening for both existing and evolving competitors. Banks fiercely compete with each other and now face fierce competition from multiple vectors.

Banks already compete against a large and powerful shadow banking system. And they are facing extensive competition from Silicon Valley, both in the form of fintechs and Big Tech companies (Amazon, Apple, Facebook, Google and now Walmart), that is here to stay. As the importance of cloud, AI and digital platforms grows, this competition will become even more formidable. As a result, banks are playing an increasingly smaller role in the financial system.

I am completely in favor of open competition, and much of the competition that I cover in this section will be good for America. One of the necessities for a healthy economy, and one at the core of America's success, is a strong, vibrant financial system. The disciplined allocation of capital, and the constant search for new opportunities for capital, is critical to growth (a corollary of the free and intelligent movement of capital is the free movement of human talent, which, ultimately, may be even more important). America's financial system is the best the world has ever seen, from our regulatory system and rule of law to exchanges, venture capital and private capital, banks and shadow banks. As our system changes, our government and regulators need to understand that maintaining the vibrancy, safety and soundness of this system is critical – and this includes maintaining a relatively fair and balanced playing field. While I am still confident that JPMorgan Chase can grow and earn a good return for its shareholders, the competition will be intense, and we must get faster and be more creative.

1. Banks are playing an increasingly smaller role in the financial system.

In the chart below, you will see that U.S. banks (and European banks) have become much smaller in size relative to multiple measures, ranging from shadow banks to fintech competitors and to markets in general.

Size of the Financial Sector / Industry

($ in trillions)		2000	2010	2020
Size of banks	U.S. banks market capitalization[1]	1.2	1.3	2.2
	U.S. GSIB market capitalization	0.9	0.8	1.2
	European banks market capitalization[1]	1.1	1.5	1.1
	U.S. bank loans[2]	3.7	6.6	10.5
	Total U.S. broker dealer inventories	2.0	3.5	3.7
	U.S. bank common equity[3]	0.4	1.0	1.5
	U.S. bank liquid assets[2,4]	1.1	2.8	7.0
Market size	Total U.S. debt and equity market	33.6	57.2	118.4
	Total U.S. GDP[5]	13.3	15.8	18.8
Shadow banks	Total private direct credit	7.6	13.8	18.4
	Total U.S. passives and ETFs[6]	6.9	13.6	30.8
	Total U.S. money market funds	1.8	2.8	4.3
	Hedge fund and private equity AUM[7]	0.6	3.0	8.0
Size of evolving competitors	Google, Amazon, Facebook, Apple[8]	NM	0.5	5.6
	Payments[9]	NA	0.1	1.2
	Private and public fintech companies[9]	NA	NA	0.8

Sources: FactSet, S&P Global Market Intelligence, Federal Reserve Z.1, Federal Reserve H.8, Preqin and Federal Reserve Economic Data (FRED)
GSIB = Global Systemically Important Banks
NA = Not applicable
NM = Not material
For footnoted information, refer to page 67 in this Annual Report.

Whether you look at the chart above over 10 or 20 years, U.S. banks have become much smaller relative to U.S. financial markets and to the size of most of the shadow banks. You can also see the rapid growth of payment and fintech companies and the extraordinary size of Big Tech companies. (As an aside, capital and global systemically important financial institution (G-SIFI) capital rules were supposed to reflect the economy's increased size and banks' reduced size within the economy. This simply has not happened in the United States.)

Some regulators will look at the chart above and point out that risk has been moved out of the banking system, which they wanted and which clearly makes banks safer. That may be true, but there is a flip side – banks are reliable, less-costly and consistent credit providers throughout good times and in bad times, whereas many of the credit providers listed in the chart above are not. More important, transactions made by well-controlled, well-supervised and well-capitalized banks may be less risky to the system than those transactions that are pushed into the shadows.

2. The growth in shadow and fintech banking calls for level playing field regulation.

The chart below shows the potential regulatory differences between being a bank and being a nonbank or a fintech company – though this varies for each type of company on each item depending upon its legal and regulatory status. In some cases, these regulatory differences may be completely appropriate, but certainly not in all cases.

When I make a list like this, I know I will be accused of complaining about bank regulations. But I am simply laying out the facts for our shareholders in trying to assess the competitive landscape going forward.

It is completely clear that, increasingly, many banking products, such as payments and certain forms of deposits among others, are moving out of the banking system. In addition, lending in many forms – including mortgage, student, leveraged, consumer and non-credit card consumer – is moving out of the banking system. Neobanks and nonbanks are gaining share in consumer accounts, which effectively hold cash-like deposits.

Payments are also moving out of the banking system in merchant processing and in debit or alternative payment systems.

We believe that many of these new competitors have done a terrific job in easing customers' pain points and making digital platforms extremely simple to use. But growth in shadow banking has also partially been made possible because rules and regulations imposed upon banks are not necessarily imposed upon these nonbanks. While some of this may have been deliberate, sometimes the rules were accidentally calibrated to move risk in an unintended way. We should remember that the quantum of risk may not have changed – it just got moved to a less-regulated environment. And new risks get created. While it is not clear that the rise in nonbanks and shadow banking has reached the point of systemic risk, this trend is accelerating and needs to be assiduously monitored, which we do regularly as part of our own business.

Bank and Nonbank Regulation Requirements

Bank	Fintech / Nonbank
1. Higher capital requirements (which also require expensive debt and non-tax-deductible preferreds), even on deposits	1. Lower capital requirements, set by market
2. Operational risk capital	2. No operational risk capital
3. Extensive liquidity requirements	3. No liquidity requirements
4. FDIC insurance (this cost JPM ~$12B over the last 10 years — and not tax deductible beginning in 2018)	4. No FDIC insurance
5. U.K. bank levy and surcharges (this cost JPM $3.2B over the last 10 years)	5. No U.K. bank levy or surcharges
6. More costly regulations (e.g., loans, CFPB, OCC), including resolution planning and CCAR	6. Less costly regulations
7. Heavy restrictions around privacy and use of data	7. Fewer privacy restrictions, virtually no data restrictions
8. Extensive KYC / AML requirements	8. Less extensive KYC / AML requirements
9. Substantial social requirements (CRA)	9. No social requirements (CRA)
10. Extensive public and regulatory reporting requirements (e.g., disclosure, compensation)	10. Limited public and regulatory reporting requirements
11. Lower revenue opportunities (i.e., Durbin — this cost JPM ~$17B over the last 10 years)	11. Higher debit card income

FDIC = Federal Deposit Insurance Corporation
CFPB = Consumer Financial Protection Bureau
OCC = Office of the Comptroller of the Currency
CCAR = Comprehensive Capital Analysis and Review
KYC = Know your customer
AML = Anti-money laundering
CRA = Community Reinvestment Act

A few items need further explanation. On capital requirements, you should always remember that the market determines this level, not regulators, and to the extent that capital requirements in one entity are much higher than another, activities will move. Ironically, because standardized capital and G-SIFI capital do not recognize credit risk, banks have a peculiar incentive to hold higher risk credit rather than lower risk credit. All companies have operational risk, and most companies absorb operating losses through earnings. Banks are required to hold substantial capital against this risk. (I'm not debating that there is operational risk.) And because of the Durbin Amendment, if a bank has a customer with a small checking account who spends $20,000 a year on a debit card, the bank will only receive $120 in debit revenue – while a small bank or nonbank would receive $240. This difference may determine whether you can even compete in certain customer segments. It's important to note that while some of the fintechs have done an excellent job, they may actually be more expensive to the customer.

Finally, it's important to point out that not only has private credit been moving to the private markets but so have companies themselves. The number of public companies in the United States has been dropping dramatically over the past two decades, which has corresponded to an even larger increase in the number of private companies. Following its peak at 8,000 in 1997, the number of public companies is now around 6,000, and if you exclude non-operating companies, such as investment funds and trust companies, the decline is even more dramatic. This is worthy of serious study. The reasons are complex and may include factors such as onerous reporting requirements; higher litigation expenses; annual shareholder meetings focused on matters that most shareholders view as frivolous or inappropriate for company actions; costly regulations; less compensation flexibility; and heightened public scrutiny. It's incumbent upon us to figure out why so many companies and so much capital are being moved out of the transparent public markets to the less transparent private markets and whether this is in the country's long-term interest.

We need competition – because it makes banking better – and we need to manage the emerging risks with level playing field regulation in a way that ensures safety and soundness across the industry.

3. AI, the cloud and digital are transforming how we do business.

We cannot overemphasize the extraordinary importance of new technology in the new world. Today, all technology is built "cloud-enabled," which means the applications and their associated data can run on the cloud. This brings many extraordinary advantages, but the one that I'd like to spotlight is the immediate ability to access data and associated machine learning with virtually unlimited compute power. Essentially, in the cloud, you can "access" hundreds of databases and deploy machine learning in a split second – something mainframes and legacy systems and databases simply cannot do. To go from the legacy world to the cloud, applications not only have to be "refactored," but, more important, data also must be "re-platformed" so it is accessible. This availability of data – and banks have a tremendous amount of data – makes data enormously valuable and digitally accessible. All of this work takes time and money, but it's absolutely essential that we do it.

We already extensively use AI, quite successfully, in fraud and risk, marketing, prospecting, idea generation, operations, trading and in other areas – to great effect, but we are still at the beginning of this journey. And we are training our people in machine learning – there simply is no speed fast enough.

4. Fintech and Big Tech are here ... big time!

Fintech companies here and around the world are making great strides in building both digital and physical banking products and services. From loans to payment systems to investing, they have done a great job in developing easy-to-use, intuitive, fast and smart products. We have spoken about this for years, but this competition now is everywhere. Fintech's ability to merge social media, use data smartly and integrate with other platforms rapidly (often without the disadvantages of being an actual bank) will help these companies win significant market share.

Importantly, Big Tech (Amazon, Apple, Facebook, Google – and, as I said, now I'd include Walmart) is here, too. Their strengths are extraordinary, with ubiquitous platforms and endless data. At a minimum, they will all embed payments systems within their ecosystems and create a marketplace of bank products and services. Some may create exclusive white label banking relationships, and it is possible some will use various banking licenses to do it directly.

Though their strengths may be substantial, Big Tech companies do have some issues to deal with that may, in fact, slow them down. Their regulatory environment, globally, is heating up, and they will have to confront major issues in the future (banks have faced similar scrutiny). Issues include data privacy and use, how taxes are paid on digital products, and antitrust and anticompetitive issues – such as favoring their own products and services over others on their platform and how they price products and access to their platforms. In addition, Big Tech will have very strong competition – not just from JPMorgan Chase in banking but also from each other. And that competition is far bigger than just banking – Big Tech companies now compete with each other in advertising, commerce, search and social.

5. JPMorgan Chase is aggressively adapting to new challenges.

As tough as the competition will be, JPMorgan Chase is well-positioned for the challenge. But our eyes are wide open as the landscape changes rapidly and dramatically. We have an extraordinary number of products and services, a large, existing client base, huge economies of scale, a fortress balance sheet and a great, trusted brand. We also have an extraordinary amount of data, and we need to adopt AI and cloud as fast as possible so we can make better use of it to better serve our customers. We need to make our extraordinary number of products and services a huge plus by improving ease of use and reducing complexity. We need to move faster and bolder in how we attack new markets while protecting our existing ones. Sometimes new markets look too small or appear not to be critical to our customer base – until they are. We intend to be a little more aggressive here.

While we will argue for a level playing field, both in terms of how products and services are treated by regulators and possibly how competition should be treated across platforms, we are not relying on much to change. So we will simply have to contend with the hand we are dealt and adjust our strategies as appropriate.

We have mentioned that our highest and best use of capital is to expand our businesses, and we would prefer to make great acquisitions instead of buying back stock. We are somewhat constrained by how much we can grow our balance sheet because our capital charges will grow with our size, so sometimes buying back stock may still be the best option. But acquisitions are in our future, and fintech is an area where some of that cash could be put to work – this could include payments, asset management, data, and relevant products and services.

We will continue to do everything in our power to make JPMorgan Chase successful – and are confident we can do so.

IV. SPECIFIC ISSUES FACING OUR COMPANY

In this section, I review and analyze some of the current critical issues that affect our company.

1. Cyber risk remains a significant threat.

We cannot overemphasize the importance of cyber risk, not just to our bank (we spend more than $600 million a year on cybersecurity) but also to our customers, countries, economies and critical industries (i.e., telecom and power). We have pointed out to our shareholders before that having disciplined cyber hygiene is almost as important as the money you spend. Threats to our cybersecurity need urgent attention from our government as issues of national security and impediments to trade. Governments should build on prior agreements in the United Nations, recognizing the applicability of international law to cyberspace and enforcing obligations to hold bad actors accountable. Acknowledging that governments and their regulatory agencies are prime targets for cyber criminals, these agencies need to provide transparency to those affected by incidents (e.g., financial institutions and others that hold sensitive data), invest in the uplift to cybersecurity, and adopt safe and sound practices for data protection and handling.

Much of our extraordinary cyber capabilities are also used to train and protect our customers, particularly in the areas of risk and fraud.

2. Brexit was finally accomplished — but uncertainties linger.

Brexit was accomplished, but many issues still need to be negotiated. And in those negotiations, Europe has had, and will continue to have, the upper hand. In the short run (i.e., the next few years), this cannot possibly be a positive for the United Kingdom's GDP – the effect after that will be completely based upon whether the United Kingdom has a comprehensive and well-executed strategic plan that is acceptable to Europe. Included among the unresolved questions is how financial services will operate. London has been a major financial center that, under all laws and regulations, could conduct business throughout Europe. For most of us, the bulk of our operations (i.e., risk, compliance, audit, legal, regulatory, market-making, investment banking, research and asset management) were performed centrally in London. It was hugely efficient for all of Europe – and for financial services companies as well. London is a magnificent place to do business in terms of the rule of law, human capital, technology, transportation, language and many other facets. But future financial regulations were left uncertain in Brexit; and it is clear that, over time, European politicians and regulators will make many understandable demands to move functions into European jurisdictions. Because of this – and because of strong European efforts to compete with London – Paris, Frankfurt, Dublin and Amsterdam will grow in importance as more financial functions are performed there. Even so, few winners are likely to emerge from this fragmentation.

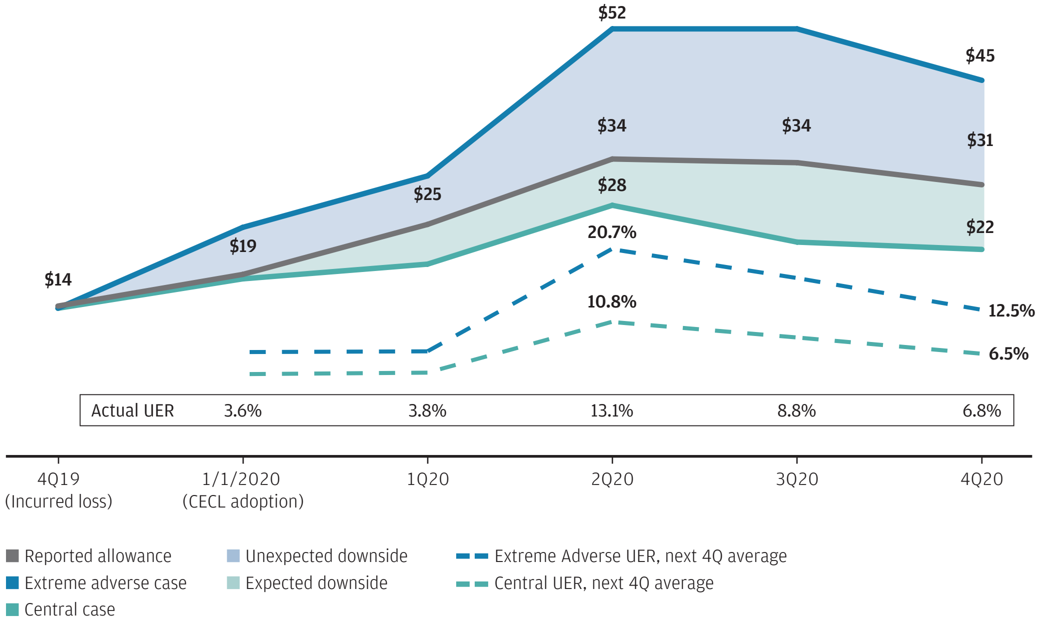
During this transition, our costs (most of which will probably be passed on to customers in one form or another) will go up as functions become duplicated. We may reach a tipping point many years out when it may make sense to move all functions that service Europe out of the United Kingdom and into continental Europe. But London still has the opportunity to adapt and reinvent itself, particularly as the digital landscape continues to revolutionize financial services. Innovation is key to preparing for doing the business of tomorrow versus relying on the shifting ways of the past.

3. New accounting requirements affect reserve reporting but not how we run our business.

A new loan loss reserving method called the current expected credit losses (CECL) standard was adopted by large financial institutions, effective January 1, 2020. To oversimplify, there were two main changes. First, you must reserve for expected credit losses over the full remaining expected life of the loan, whereas in the past, we reserved for losses that had already been incurred using a forecast over a loss emergence period, for example the ensuing 12 months or so for credit cards. Second, you were to incorporate different reasonable and supportable macroeconomic forecasts (for multiple scenarios) in estimating losses. Given the benign macroeconomic environment when this new CECL standard was adopted, it increased reserves by only $4.3 billion, which was primarily attributed to moving to lifetime loss coverage for Card, with only a small amount of reserves for the probability of a far worse economic environment.

Hundreds of variables go into the scenarios and calculations shown in the chart below. During periods of stress, the firm leaned more heavily to the downside to reflect uncertainties not fully captured by the scenarios themselves. Uncertainties included a substantial drop in headline employment without corresponding job creation, the degree of permanent job losses, the extent and timing of federal government assistance, unknowns around vaccine efficacy against new virus strains, and the potential for economic scarring from changes in consumer behavior and the recovery of directly impacted sectors.

Allowance: Range of Downside Uncertainty
($ in billions)



CECL = Current expected credit losses
UER = Unemployment rate

The best way to look at this is to analyze our loan loss reserves as of December 31, 2020. Our central case is essentially our baseline forecast (and is roughly similar to the Federal Reserve's current forecast at the time), which would have unemployment over the ensuing 12 months at 6.5%. If we reserved to this case, our reserves would total $22 billion. But we run multiple scenarios – one of which is an extreme adverse case. This worst case, which is slightly more severe than the Federal Reserve's extreme adverse case, would have unemployment over the ensuing 12 months at 12.5% (among other variables). If we reserved as if this scenario had a 100% chance of happening, we would require $45 billion in reserves. After probability weighting multiple scenarios, we ended the year with $31 billion in reserves.

Clearly in turbulent times, these scenarios and the probabilities assigned to them are highly uncertain and volatile. The following are also clear and extremely important:

The firm earns almost $50 billion +/- pre-provision profit annually; it is able to easily handle large increases in reserves; and we could easily have done substantially more while maintaining high capital and high liquidity. This is also why we saw no reason to cut our dividend. If, however, the worst-case scenario had happened (which means it could have gotten even worse from there), we might have cut our dividend to retain capital out of prudence.

Importantly, CECL does not change risk management or the way we run the company. We have been lending, and will continue to lend, to our clients and customers throughout the pandemic with prudent risk management. Our credit risk decisions and broader risk appetite are mostly driven by our clients' needs and market conditions rather than solely by reserve methodology. While reserve levels are an estimate reflecting management's expectations of credit losses at the balance sheet date, they may not reflect the amount of losses ultimately realized.

4. While we disbanded Haven, we will continue to build on what we learned.

Although the United States has some of the best healthcare in the world (i.e., doctors, pharmaceutical care and innovation) and many people from other countries come here when they need serious medical attention, the problems associated with healthcare are serious, rampant and obvious. Our costs are more than twice those of the developed world without justification by better outcomes. There is no transparency in pricing, with patients legitimately complaining of hidden costs. And chronic care is not necessarily managed properly. More than 30 million Americans are uninsured, and we are falling short in basic wellness.

Amazon, Berkshire Hathaway and JPMorgan Chase set up Haven to address some of these problems, and, in the process, we learned a lot about how the healthcare system could be improved. Although we decided to disband Haven, JPMorgan Chase will continue to build on what we learned. We will invest in healthcare innovation and other approaches to improve the health and well-being of our employees and address this critical national issue. More details will be shared as we progress.

V. COVID-19 AND THE ECONOMY

Within days of realizing that COVID-19 was a global pandemic that would virtually close down large parts of the world's economies, the U.S. government moved with unprecedented speed. Fortunately, banks were part of the solution – unlike in the Great Recession. And unlike the Great Recession, the U.S. economy was actually in good shape going into the COVID-19 recession. Though there are many differences, it's instructive to compare the recovery from the Great Recession with the expected recovery from the COVID-19 recession.

1. Bold action by the Fed and the U.S. government effectively reversed financial panic.

The Federal Reserve (critically, with the support of the U.S. Treasury) immediately rolled out facilities that financed Treasuries, corporate bonds, mortgage-backed securities and other securities that effectively reversed the financial panic taking place. A full-blown financial crisis would have made the COVID-19 recession far worse, deeper and longer. Markets reacted extremely positively, and companies, over the next nine months, raised an unprecedented $2 trillion in debt and equity at good prices, dramatically improving their financial condition and balance sheets.

Congress, importantly, also took immediate action to provide fiscal stimulus, the Coronavirus Aid, Relief, and Economic Security Act, also known as the CARES Act, totaling $2.2 trillion. This largely consisted of stimulus payments to individuals, enhanced unemployment insurance and loans, which could be forgiven, to small businesses. Please see the sidebar on page 36 for more detail on the Paycheck Protection Program.

Suffice it to say while real damage was done, the size and scope of these programs dramatically reversed the deterioration of the economy and unemployment, which hit 14.8% in April 2020 but made steady progress back to 6.7% by the end of the year – though this number underrepresents the damage that was done because of the large deterioration in labor force participation and the potential permanent loss of many small businesses.

One last important point: The speed and breadth of the programs were critical, and there is no way they could have been done perfectly. While it always makes sense to do a thorough postmortem review and to properly punish those who deliberately misuse emergency government programs, we should try to avoid excessive finger-pointing.

2. Banks entered this recent crisis in great shape and were part of the solution coming out.

The banking system was in excellent shape going into this crisis, and just about every bank took extensive actions to help their customers, employees and communities. The sidebar on page 37 details how JPMorgan Chase responded to support various stakeholders. It's important to note that many of these programs went far beyond what was requested by the government.

Of course, banks are always affected, for the better and worse, by just about everything that impacts the economy. Some have said that banks were helped, or even bailed out, by the government's actions. The government took these actions to help those who needed it – not to help the banks. These actions helped just about everyone – and they had a collateral benefit to the banks.

The Paycheck Protection Program

The Paycheck Protection Program, while not perfect, was a tremendous achievement.

In the spring of 2020, lenders had seven frantic days to get ready to accept applications for $349 billion in loans through the newly created Paycheck Protection Program. Often known simply as PPP, the federal program provided desperately needed cash to help businesses sustain payroll so their employees could put food on their tables and make their rent or mortgage payments. If a business used the loan to pay its employees and certain other permitted expenses, the Small Business Administration would fully forgive the loan.

Not surprisingly, there were bumps in the road as the SBA and lenders worked around the clock to establish and implement specific rules and processes, as well as develop the technology to support the program. Ultimately, though, it was a lifesaver for millions of U.S. businesses. In Business Banking, we processed more than four years' worth of loan applications in 23 days – a combination of digital prowess and the efforts of more than 1,000 people who manually reviewed applications and contacted clients after hours and on weekends to correct errors.

All told, in 2020, we funded over 280,000 PPP loans for more than $32 billion – the most of any lender – to companies that employ a total of 3+ million people. We are especially proud that we helped some of America's smallest businesses: childcare centers, social service agencies, schools, grocery stores, physicians' offices and restaurants. In fact, half of our loans went to companies with fewer than five employees. And we're fully engaged in the 2021 edition of PPP: Through March 2021, we've funded in excess of 130,000 loans for more than $10 billion – again, the most of any lender. And more than 90% of those loans went to businesses with fewer than 25 employees.

Given that most small businesses keep just two weeks of cash on hand, the government and lenders had to act with exceptional speed. What they created in record time was unprecedented and really quite extraordinary. The program accomplished what it set out to do. Together, we helped many small businesses survive and kept a painful recession from becoming far, far worse.

JPMorgan Chase Helped Thousands of Small Businesses in 2020

more than **280K** loans funded

more than **$32B**[1] in relief

more than **3M** employee jobs

$112K average loan amount

~80% of loans were for **less than $100K**

~80% of loans went to businesses with **fewer than 10 employees**

~50% of loans went to businesses with **fewer than 5 employees**

~30% of loans went to businesses in **majority-minority census tracts**

1 $28 billion excluding Small Business Administration safe harbor refunds.

JPMorgan Chase: Supporting the "Real Economy" during the COVID-19 Crisis

To support the "real economy" — our customers, clients, employees and communities impacted by the global crisis — JPMorgan Chase has brought the full force of its core business and expertise.

In 2020, we raised capital and provided credit totaling **$2.3 trillion for customers and businesses of all sizes**, helping them meet payroll, avoid layoffs and support operations.

Through March 2021, we've provided **more than $40 billion to more than 400,000 small businesses** through the PPP program.

Since March 13, 2020, we've delayed payments and refunded fees for customers on **over 2 million accounts**.

We committed **$250 million** in global business and philanthropic initiatives, with particular focus on the most vulnerable people and communities hardest hit by the pandemic.

Our ability to do all this, and more, is the result of the actions and investments we've made over many years to build a strong and resilient company.

CUSTOMERS

- Offered delayed payments and forbearance options for around 2 million mortgage, auto and credit card accounts representing $85 billion in loans
- Refunded **$120 million in fees** on consumer deposit accounts for nearly 1 million customers
- Streamlined relief benefit enrollment and renewal processes and required no evidence of hardship

SMALL BUSINESSES

- Supported distribution of funds through the SBA PPP
- Provided **$18 billion** in new and renewed credit for U.S. small businesses (outside of PPP) in 2020
- Delayed payments for **21,000** loans and refunded **$24 million** in deposit fees for more than 130,000 small businesses
- Committed **$350 million** to support underserved small businesses, including Black and Latinx companies

EMPLOYEES

- **Continued to pay employees** for regularly scheduled hours even if hours were reduced by temporary site closures or other circumstances
- Provided a **special payment** to select full- and part-time employees whose role required continuing on-site work
- Enhanced support for working parents, including childcare and tutoring
- Expanded access to medical resources

LARGE EMPLOYERS AND ESSENTIAL SERVICES

- Helped many large employers **avoid layoffs and furloughs** for countless Americans
- Extended funding to nonprofit and government services, such as hospitals and transportation, to support **continued essential services for their communities**
- Provided **$865 billion** in credit for corporations that, collectively, employ tens of millions of workers

LANDLORDS AND RENTERS

- Provided more than **$70 million** in loan relief through nearly 1,500 multifamily loans, affecting housing for more than 27,000 tenants
- Offered landlord borrowers periods of interest-only payments, deferral of mortgage payments and the ability to capitalize prior deferred payments over two years or more
- Provided payment assistance to millions of Chase customers, freeing up capital for rent or other critical expenses

COMMUNITIES

- **Committed $200 million** to help underserved small businesses and nonprofits access low-cost capital through community partners
- **Committed $50 million** to address public health and long-term economic challenges resulting from COVID-19

But many companies, large and small, may not have survived had JPMorgan Chase not taken extraordinary efforts to help them.

While the government's actions were a benefit to banks, there is no question the banks were able to weather a terrible storm while reserving extensively for potential future loan losses. Importantly, the Fed conducted two additional severely adverse Comprehensive Capital Analysis and Review (CCAR) stress tests, which projected bank results under extreme unemployment, GDP loss, market disruption and a smaller government stimulus. The result showed that banks could withstand this extreme outcome while continuing to finance the economy. I also have very little doubt that if the severely adverse scenario played out, JPMorgan Chase would perform far better than the stress test projections.

3. The confusing interplay of monetary, fiscal and regulatory policy continues through recessions.

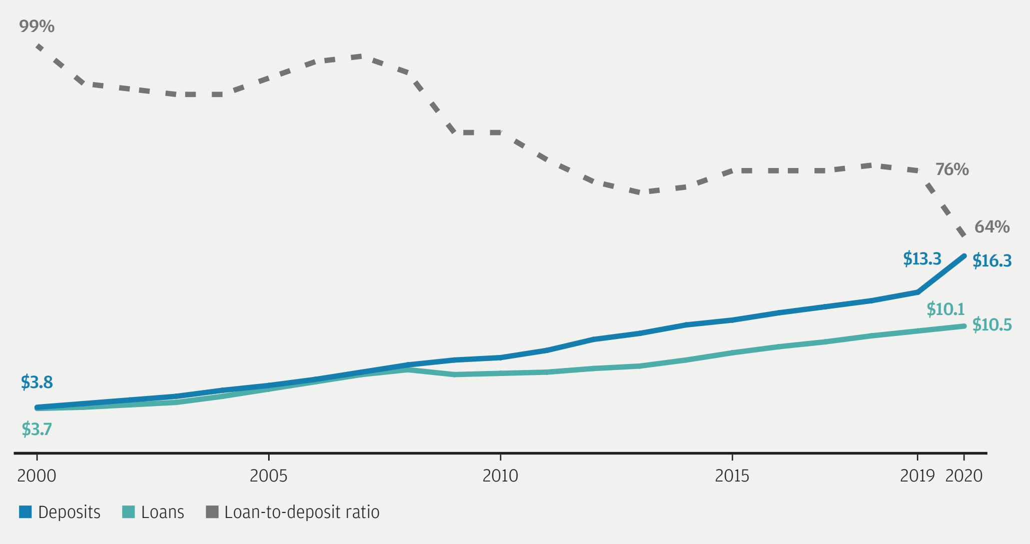
Prior to the Great Recession in 2008, banks operated under a completely different regulatory, capital and liquidity regime. Banks held less capital (for many banks, it was too little), they left virtually no money deposited at the Fed, they generally lent out an amount roughly equal to their deposits and they had less liquidity, mostly in the form of Treasuries and mortgages (the securities portfolio was also used for interest rate exposure). This completely changed with Dodd-Frank (the Dodd-Frank Wall Street Reform and Consumer Protection Act) capital/liquidity rules in 2010, and it changed again dramatically with the COVID-19 recession of 2020.

The quantitative easing and fiscal stimulus taken after the Great Recession were partially offset by changes in regulatory policy.

As the chart on the next page illustrates, until the Great Recession of 2008, banks were generally able to lend out 100% of their deposits. In addition, they maintained liquidity in the form of securities. Dodd-Frank created a new rule called the liquidity coverage ratio (LCR), which required banks to permanently "lock up" a lot more liquidity and also created more restrictions around what counted as liquidity. The new regulations generally limited liquidity sources to cash deposits at central banks, Treasuries and a portion of government-guaranteed securities. It should be noted that while the historic bank reserve requirement is now zero, it has effectively been replaced with LCR, which is substantially the same thing as a reserve requirement but far more stringent. In addition, we obviously saw an increase in capital requirements and their complexity. Taken together, these changes resulted in the loan-to-deposit ratio dropping to approximately 75% – and it is likely to stay approximately there unless regulations are changed. While loans are, of course, subject to supply and demand, this is a structural reduction that was clearly due to regulatory changes. The effect was also enduring: As banks phased in these rules, this new restriction limited their ability to extend credit, and that, in turn, may have held back the economy from reaching its maximum potential output.

To understand this in more specific terms, look at the chart on the next page that shows, prior to the COVID-19 recession, banks had \$13 trillion in deposits and only \$10 trillion in loans. This \$3 trillion in "lost" lending (this is, in part, directly related to the new liquidity requirements) may very well have contributed to the secular stagnation experienced in the last decade. If \$3 trillion more had been lent, the banking sector would have fostered a more dynamic economy, and GDP growth over the past decade would almost certainly have been faster.

Bank Deposits and Loans through Time
($ in trillions)



Source: Federal Reserve H.8 data for all commercial banks in the U.S.

If you aren't convinced yet – consider how surprising it is that $3.4 trillion of quantitative easing (QE) and deficit spending averaging 5% of GDP over the 10-year period after the Great Recession did not result in higher GDP growth and possibly higher inflation. As a reference point, in the mid-1970s, there was ***no*** QE – and deficit spending hit 4%, which many people thought was the main reason for the overheated economy and inflation, which, at its peak, was over 12%.

And so why did all this quantitative easing not have the effect you would have thought? QE was never effectively tried prior to the Great Recession, and it is different from fiscal spending. QE is the purchase of securities from security holders who tend to reinvest in the same or similar securities. Clearly, QE reduces interest rates, pushes up asset prices and creates some spending (through the wealth effect). QE, on the one hand, may have some inflationary effects, mostly on asset prices. But on the other hand, it also may have some disinflationary effects – lower interest rates themselves, which is an input cost for businesses, and lower income to savers – which may reduce consumption and may increase the propensity to save (e.g., we may need to set aside more money to protect retirement income). And finally, in this most recent round of QE, much of the money simply made a round trip – because of the new liquidity rules, it ended up back as deposits at the Fed, not as loans.

The fiscal deficit is, pure and simple, giving various individuals and institutions money to spend – which they will spend over time. All things being equal, this is, and always has been, inflationary. Of course, in a recessionary environment with low inflation, like after the Great Recession, this might be precisely what is needed without causing overheating or excessive inflation.

My own view: The anemic growth in the decade after the Great Recession was due to some of the factors I mention above but also due to many of the public policy failures that I outline in the next section.

The QE and deficit-spending response to the COVID-19 pandemic is of a completely different magnitude and without some of the offsetting drags that trailed the Great Recession.

The chart below shows that for the United States, QE actual in 2020 and QE projected for 2021 total $4.6 trillion or almost 25% of GDP. Deficit spending for the two years combined is projected to total $6.8 trillion, or about 35% of GDP. These numbers are far larger than the first couple of years of the Great Recession, and it is important to note that the rest of the world is showing similar actions, compounding the global effect.

As another reference point, during World War II the deficit hit almost 30%, and it averaged 16% over the five-year period from 1941 to 1946. This period did not create lasting inflation as the circumstances were completely different – we were coming out of a deep depression, and the money was spent financing a war.

Circumstances and starting points matter. Before the Great Recession, you had an overleveraged financial system and overleveraged consumers. For years after the Great Recession, there was a massive deleveraging in the United States by consumers, many investors and financial institutions, somewhat due to regulations. Today, this is not the case.

In the United States, the average consumer balance sheet is in excellent shape. The consumer's leverage is lower than it has been in 40 years. In fact, prior to the last $1.9 trillion stimulus package, we estimate that consumers had excess savings of approximately $2 trillion. Corporations also have an extraordinary amount of cash on their balance sheet, estimated to be approximately $3 trillion. And the financial system and investors have already adopted more conservative leverage requirements due to regulations – so they have very little need to de-leverage. The QE in this go-around will have created more than $3 trillion in deposits at U.S. banks, and, unlike the QE after the Great Recession, a portion of this can be lent out.

I have little doubt that with excess savings, new stimulus savings, huge deficit spending, more QE, a new potential infrastructure bill, a successful vaccine and euphoria around the end of the pandemic, the U.S. economy will likely boom. This boom could easily run into 2023 because all the spending could extend well into 2023. The permanent effect of this boom will be fully known only when we see the quality, effectiveness and sustainability of the infrastructure and other government investments. I hope there is extraordinary

Quantitative Easing and Deficit Spending of G4 Nations

	Quantitative Easing				Deficit Spending			
	2020		2021 Estimate		2020		2021 Estimate	
	$T	% of GDP	$T	% of GDP	$T	% of GDP	$T	% of GDP
U.S.	3.2	17%	1.4	7%	3.1	17%	3.7	19%
Other G4 nations	4.5	22%	2.0	9%	2.9	14%	1.7	8%
Total G4 nations	**7.7**	**20%**	**3.4**	**8%**	**6.0**	**15%**	**5.4**	**13%**

T = Trillions
GDP = Gross Domestic Product

discipline on how all of this money is spent. Spent wisely, it will create more economic opportunity for everyone.

While equity valuations are quite high (by almost all measures, except against interest rates), historically, a multi-year booming economy could justify their current price. Equity markets look ahead, and they may very well be pricing in not only a booming economy but also the technical factor that lots of the excess liquidity will find its way into stocks. Clearly, there is some froth and speculation in parts of the market, which no one should find surprising. As Captain Louis Renault said in Casablanca, "I'm shocked, shocked to find that gambling is going on in here!"

Conversely, in this boom scenario it's hard to justify the price of U.S. debt (most people consider the 10-year bond as the key reference point for U.S. debt). This is because of two factors: first, the huge supply of debt that needs to be absorbed; and second, the not-unreasonable possibility that an increase in inflation will not be just temporary.

In 2020, the Federal Reserve bought essentially 100% of all new issuance of Treasury notes and bonds. In 2021, with the Fed's current QE commitments, the market (not the Fed) will have to absorb $2.2 trillion in government debt – approximately 85% of which will be in longer duration maturities. This is a large number, even for the United States. We should also remember that many, if not most, buyers of U.S. debt are essentially required to buy; i.e., foreign central banks, banks, insurance companies, foreign exchange reserve managers and duration hedgers. A notable exception is investors who buy the 10-year bond to take risk-off positions. However, all of these buyers will seek out alternatives – and there are always some – if they become worried about the long-term, sustainable value of Treasury bonds. And remember, annual inflation is already running at 1.7%.

We don't know what the future holds, and it is possible that we will have a Goldilocks moment – fast and sustained growth, inflation that moves up gently (but not too much) and interest rates that rise (but not too much). A booming economy makes managing U.S. debt much easier and makes it much easier for the Fed to reverse QE and begin raising rates – because doing so may cause a little market turmoil, but it will not stop a roaring economy.

And, of course, being who we are, while we are going to hope for the Goldilocks scenario – and we think there is a chance for that to happen – we will anticipate and be prepared for two other negative scenarios: 1) the new COVID-19 variants may be more virulent and resistant to the vaccine, which could obviously reverse a booming economy, damage the equity markets and reduce interest rates as there is a rush to safety, and 2) the increase in inflation may not be temporary and may not be slow, forcing the Fed to raise rates sooner and faster than people expect.

Much of the stimulus may very well hit when the economy is doing quite well. During the pandemic, it was appropriate that fiscal and monetary policy be fairly well-coordinated – working in concert to counter the pandemic-related downturn. In an inflationary case, fiscal and monetary policy may very well be at odds. I am reminded of when Paul Volcker effectively raised interest rates by 200 basis points on a Saturday night. Also in this case, the cost of interest on U.S. debt could go up fairly dramatically making things a little worse. Rapidly raising rates to offset an overheating economy is a typical cause of a recession. One other negative: In this case, we would be going into a recession with an already very high U.S. deficit.

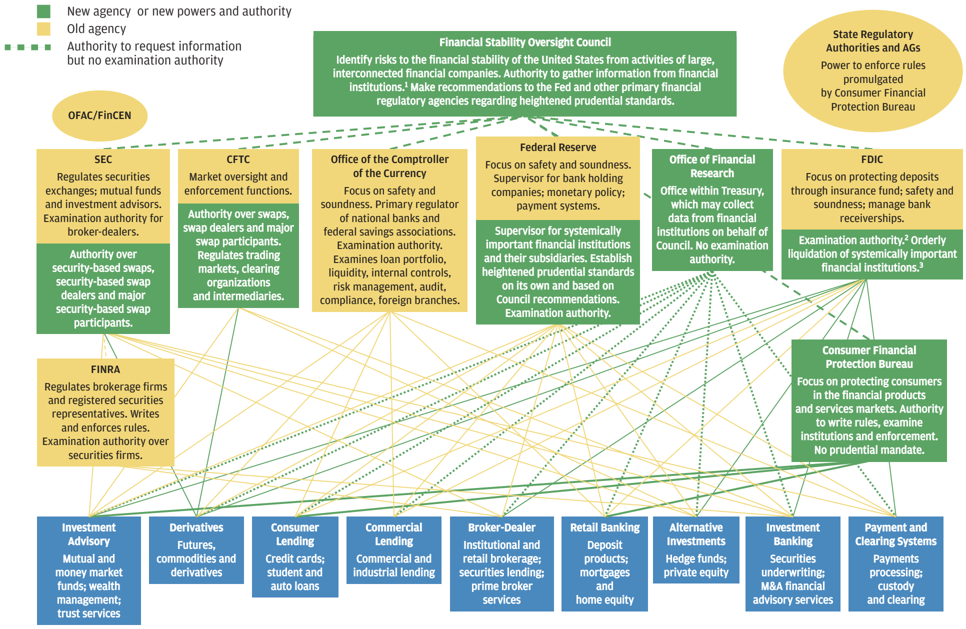
The government did the right thing by moving extraordinarily quickly to stop the COVID-19 recession from being extremely damaging. If we spend this money wisely, react quickly to changing circumstances and fix many of the public policy failures that are outlined in the next section, we can build a stronger and more equitable nation.

4. The regulatory system needs to keep up with the changing world — and finish Dodd-Frank to get it right.

We have a lot of experienced and hard-working regulators in the United States and globally. But I'm afraid that we gave them a virtually impossible job. The financial world is complex and rapidly changing. We gave them a regulatory system that is slow and backward-looking. A few years ago, my letter to shareholders included a "spaghetti chart" to illustrate how complex the regulatory environment in the United States had become. We're republishing it here to make a few points. We have multiple regulators with overlap-

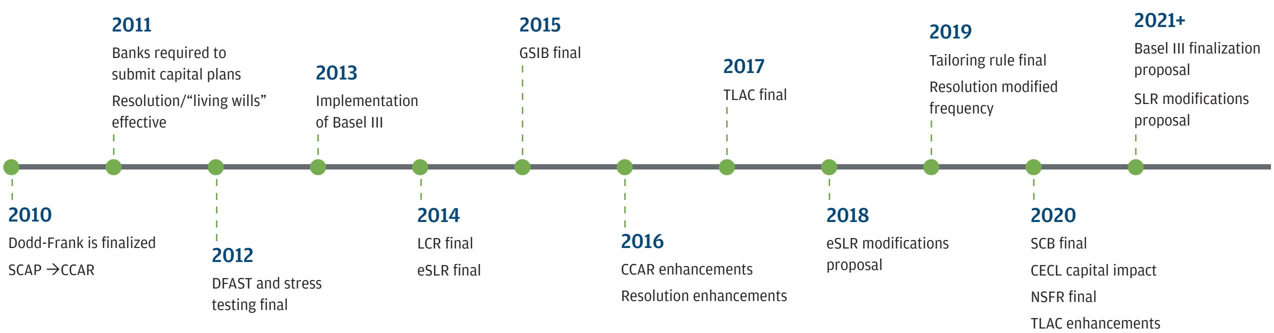
Complexities of the Regulatory System

Reprinted from the 2011 Chairman and CEO Letter to Shareholders



Note: Green lines from SEC and CFTC represent enhanced authority over existing relationships
This chart assumes these activities are conducted in a systemically important bank holding company (BHC)
For footnoted information, refer to page 67 in this Annual Report.

Timeline of U.S. Capital and Liquidity Regulation



CCAR = Comprehensive Capital Analysis and Review
CECL = Current Expected Credit Losses
DFAST = Dodd-Frank Act Stress Tests
eSLR = Enhanced Supplementary Leverage Ratio
GSIB = Global Systemically Important Banks
LCR = Liquidity Coverage Ratio
SCAP = Supervisory Capital Assessment Program
SCB = Stress Capital Buffer
NSFR = Net Stable Funding Ratio
TLAC = Total Loss-Absorbing Capacity

ping rulemaking, oversight and examination authorities. All of the agencies are independent, and there is no one real authority that can coordinate all the moving parts and bridge differences. The Financial Stability Oversight Council, chaired by the U.S. Secretary of the Treasury, is really just a convening body – no one agency has the ability to adjudicate decisions. Any one agency can hold up major decisions – and this unnecessarily politicizes and slows the regulatory policymaking process.

We don't give our regulators the political cover they need. Proper regulation requires a finely tuned, thoughtful and often-changing balance between competing needs and risks. This, in particular, puts the Federal Reserve, the key oversight regulator, in a terrible position. Monetary policy is so critical to our country that the Fed must necessarily subjugate and sacrifice regulatory policy to achieve its monetary policy goals.

That said, I will look at the regulatory system from the regulators' point of view and describe what I would want to do if I were in their shoes. Let's start with basic regulatory principles:

- Ensure that safety and soundness come first but not at the expense of maximum long-term growth
- Keep the banks funding their clients through the inevitable downturns and crises
- Create a fairly level international playing field (we don't need to see perfection here, but it needs to be fair)
- Constantly assess emerging risk to the system

Dodd-Frank worked.

While Dodd-Frank included a lot of things that had nothing to do with safety and soundness and the Great Recession, to be fair, it accomplished its basic objectives – higher levels and quality of capital and liquidity, more stringent stress testing, strong resolution capabilities and better governance that created a far healthier banking system, which we've just seen. Nothing like what happened to the banks in the Great Recession can happen again.

But it's bogged down in the past — it needs to focus on the future.

It is obvious, however, that we are bogged down. Ten years after the financial crisis, we still have not put the finishing touches on Basel III (aka Basel IV). And it's not clear when it's finished if it will be an ***international*** level playing field. In addition, there are many things that need to be recalibrated. For example, we have not corrected mortgage rules to make mortgages more accessible to more Americans.

Not only are we slow in dealing with the past, but it distracts us from dealing with the future. There are serious emerging issues that need to be dealt with – and rather quickly: the growth of shadow banking, the legal and regulatory status of cryptocurrencies, the proper and improper use of financial data, the tremendous risk that cybersecurity poses to the system, the proper and ethical use of AI, the effective regulation of payment systems, disclosures in private markets, and effective regulations around market structure and transparency (payment for order flow, high-frequency trading and exchanges).

We need to actively decide what we want in the regulatory system.

Regulators need to decide what they want included in the regulatory system – and what they don't want included. They can do this by product and by service; however, to do so, they need to apply the same rules to everyone. We need to recognize that if a regulated system has higher capital requirements than the market demands, then the product will move outside of the regulated system. If we are going to do this, we should do it deliberately and with ***aforethought***. Today, there are extensive differences between the requirements placed on banks versus nonbanks engaging in the same activity. I will give one example of the impact of market capital versus regulatory capital. Under standardized capital, whether we make a AA loan or a BB loan, approximately 10% of equity capital is required to support it (plus other expensive debt). In the nonbank market, institutions and securitizations can possibly finance the investment grade debt effectively with 5% equity capital. Ironically, this pushes high-grade credit out of banks and incentivizes more risky lending.

We need to calibrate how much liquidity and capital should be required for banks in a way that balances what you want in the regulatory system while maximizing both safety and soundness of banks and the growth of the economy.

One day, someone is going to ask why the banking system has $4 trillion either in the form of cash or deposits at the Fed or as Treasury securities. Shouldn't we use some of this liquidity to help the economy grow? It's a good question, and I've yet to see agreement on the right answer. Under the old regulatory regime, banks could turn to the Fed's discount window to create a tremendous amount of liquidity by pledging their securities and loans at times of surging demand – it no longer works this way. In today's regime, using the discount window is so stigmatized that far fewer banks consider it a viable option, meaning that liquidity never reaches the banking system and, by default, the broader economy.

This calibration will be one of the main factors in determining what ends up in the regulatory system – and what doesn't. It is a fine balance. Too much capital and liquidity could possibly slow down the economy and push lots more to the shadow banking system. Too little capital and liquidity could make banks riskier and more subject to failure. And remember, products and services inside a well-regulated system will generally have higher scrutiny, transparency and reporting supporting them. This decision will be a key factor in determining the probability of a large bank's failure, which raises the question ...

Should large banks be allowed to fail?

It is very easy to take one side of this argument. After the Great Recession of 2008, the answer was generally "never again!" The system was rebuilt to minimize the odds so that no large bank would ever fail again – regardless of the consequences. The Fed has to decide if it is willing to accept a large bank failure, provided that failure isn't going to bring the market down or put the average customer in harm's way. To me, the obvious answer should be "yes." The market can easily absorb a bank failure, particularly since the government now has the tools to have an orderly unwind of even the largest financial institutions. In addition, if you look at the market price of bank debt, failure is priced in (just like all other corporates) – bank debt and bank preferreds are not cheap. The market can deal with the failure of bank debt – in fact, resolution maximizes the odds of recovering your money. The cost to the economy of having fail-safe banks may not be worth it. Dodd-Frank accomplished two very important things. First, the chance of a bank failure is dramatically lower. Second, and maybe more important, a failing large bank can be managed in a way that it does not affect the economy any more than any other large company that fails. A yoke that is too tight may throttle the economy.

Finally, banks need to be allowed to properly manage their capital to maintain any kind of premium in the market. Proper capital management means consistent dividends, the ability to reinvest in your business and incentives to buy back stock when it's cheap – not when it's expensive. The procyclicality of both accounting and bank regulatory management virtually assures the opposite. It is one of the reasons that bank stocks may not trade particularly well.

We need to decide who we want to intermediate in the markets when there is stress.

Several times in the last few years you have seen dislocation in our repo markets, Treasury markets and, in March 2020, all of our markets. In many cases, the Fed has had to step in to intermediate and help finance these markets.

Part of the reason for this is the probably unintended confluence of new regulations. We now manage our bank to try to maximize and optimize across more than 20 capital and liquidity factors (we run the bank to serve customers, but we maximize capital and liquidity requirements for economic reasons). But the confluence of three main constraints (the LCR, the supplementary leverage ratio (SLR) rule and G-SIFI) created red lines that we cannot cross. Over the past two years, we saw significant dislocation in the U.S. Treasury (UST) repo markets, which were certainly linked to these regulations. At those moments of stress, by simply reducing the regulatory cost of UST repo, we could have supplied hundreds of billions of dollars in additional UST financing to the market (this activity would be properly collateralized and very safe) – and remember, we are only one market player. In addition, when the market had high stress, we could also have lent hundreds of billions of dollars against corporate bonds, mortgage securities or equities to help market participants sell or deleverage in an orderly way. We did much of this in the Great Recession, but today's new rules precluded us from taking these actions this time. JPMorgan Chase was essentially "the discount window" for the marketplace before Dodd-Frank – we would lend freely against good collateral just as the central bank was the discount window for banks in a crisis. This system is broken.

The main point is that if large players cannot intermediate in markets because of regulatory requirements, the Fed will have to do it – and far more frequently than just in the worst crises. I do not believe that this is good, long-term central bank policy.

Finally, more thought should be given to how stress tests and buffers can and should be used in a financial crisis. The main question is when you are in the depths of a crisis, how do you stress test without going down a rabbit hole? And is that the time when bank boards are going to allow people to reduce their capital buffers? Plain and simple, countercyclical buffers do not work.

Public rhetoric and the politicization of complex regulations aside, proper design of these systems should be done to maximize the health of the U.S. economy for all. Overall, the banks – and, importantly, your bank – stand ready to do more.

5. The pandemic accelerated remote working capabilities, which will likely carry forward.

While we are continually preparing for multiple business resiliency scenarios (i.e., data center failures, closures of cities, major storms, even pandemic planning), we never prepared for a global pandemic, which also entailed a large-scale shutdown of the global economy. And while many of our employees, particularly in the branches, continued to work on our premises every day, it was amazing how quickly we were able to set up the technology – from call centers and operations to trading and investment banking – to enable our employees to work from home. We learned that we could function virtually with Zoom and Cisco and maintain productivity, at least in the short run.

The COVID-19 pandemic changed the way we work in many ways, but, for the most part, it only accelerated ongoing trends. And while working from home will become more permanent in American business, it needs to work for both the company and its clients. I believe our firm's on-site versus remote work will sort out something like this:

- Generally speaking, we envision a model that will find many employees working in a location full time. That would include nearly all of the employees in our retail bank branches, as well as jobs in check processing, vaults, lockbox, sales and trading, critical operations functions and facilities, amenities, security, medical staff and many others.

- Some employees will be working under a hybrid model (e.g., some days per week in a location and the other days at home).
- And a small percentage of employees, maybe 10%, will possibly be working full time from home for very specific roles.

In all cases, these decisions depend upon what is optimal for our company and our clients, and we will extensively monitor and analyze outcomes to ensure this is the case. Of course, we will also continue to reopen following health authority and government guidelines and our own established processes. Remote work ***will change*** how we manage our real estate. We will quickly move to a more "open seating" arrangement, in which digital tools will help manage seating arrangements, as well as needed amenities, such as conference room space. As a result, for every 100 employees, we may need seats for only 60 on average. This will significantly reduce our need for real estate.

The virtual world also presented some serious weaknesses. For example:

- Performing jobs remotely is more successful when people know one another and already have a large body of existing work to do. It does not work as well when people don't know one another.
- Most professionals learn their job through an apprenticeship model, which is almost impossible to replicate in the Zoom world. Over time, this drawback could dramatically undermine the character and culture you want to promote in your company.
- A heavy reliance on Zoom meetings actually slows down decision making because there is little immediate follow-up.
- And remote work virtually eliminates spontaneous learning and creativity because you don't run into people at the coffee machine, talk with clients in unplanned scenarios, or travel to meet with customers and employees for feedback on your products and services.

Finally, we still intend to build our new headquarters in New York City. We will, of course, consolidate even more employees into this building, which will house between 12,000 to 14,000 employees. We are extremely excited about the building's public spaces, state-of-the-art technology, and health and wellness amenities, among many other features. It's in the best location in one of the world's greatest cities.

VI. PUBLIC POLICY

AMERICAN EXCEPTIONALISM, COMPETIVENESS AND LEADERSHIP: CHALLENGED BY CHINA, COVID-19 AND OUR OWN COMPETENCE.

Our nation is clearly under a lot of stress and strain from various events: the COVID-19 pandemic, of course, which has taken more American lives than the total lost in World War II, the Korean War and the Vietnam War combined, resulting in acute economic distress for millions more; the brutal murder of George Floyd and the racial unrest that followed; the divisive 2020 presidential election, culminating in the storming of the Capitol and the attempt to disrupt our democracy; and the seemingly inevitable, but nonetheless alarming and unnerving, rise of China, threatening America's global preeminence.

America has faced tough times before – the Civil War, World War I, the U.S. stock market crash of 1929 and the Great Depression that followed, and World War II, among others. As recently as the late 1960s and 1970s, we struggled with the loss of the Vietnam War, political and racial injustice, recessions, inflation and the emergence of Japan as an economic power. But in each case, America's might and resiliency strengthened our position in the world, particularly in relation to our major international competitors. This time may be different.

China's leaders believe that America is in decline. They believe this not only because their country's sheer size will make them the largest economy on the planet by 2030 but also because they believe their long-term thinking and competent, consistent leadership have outshone America's in so many ways. The Chinese see an America that is losing ground in technology, infrastructure and education – a nation torn and crippled by politics, as well as racial and income inequality – and a country unable to coordinate government policies (fiscal, monetary, industrial, regulatory) in any coherent way to accomplish national goals. Unfortunately, recently, there is a lot of truth to this.

Perhaps we were lulled into a false sense of security and ***complacency*** in the last two decades of the 20th century as we enjoyed relative peace in the world and a position of global dominance, validated by the fall of the Soviet Union. During those two decades, we experienced relatively uninterrupted and strong growth, resulting in broad improvement in income for almost all Americans. That stability was shattered by the September 11, 2001, terrorist attacks, which were followed by nearly 20 years of overseas combat for American soldiers. Economic growth over the last two decades (including the Great Recession of 2008) has been painfully slow, with increasing income inequality and virtually no growth in income at the lower rungs of the economic ladder. The COVID-19 pandemic, for which our nation was totally unprepared, capped by the horrific murder of George Floyd, shoved into the spotlight our country's profound inequities and their devastating effects – inequities that had been there for a long time. Once more, our country suffered, and its least well-off individuals suffered the most. Unfortunately, the tragedies of this past year are only the tip of the iceberg – they merely expose enormous failures that have existed for decades and have been deeply damaging to America.

Today, the United States and other countries around the world are grappling with many other critical issues. To name just a few: capitalism versus other economic systems; access to healthcare; immigration policy; the role of business in our society; and how, or even whether, the United States intends to exercise global leadership. Many Americans have lost faith in their government's ability to solve these and other problems – in fact, most people would describe government as ineffective, bureaucratic and often biased. Almost all institutions – governments, schools, media and businesses – have lost credibility in the eyes of the public. And perhaps for good reason: Many of our problems have been around for a long time and are not aging well. Politics is increasingly divisive, and government is increasingly dysfunctional, leading to a number of policies that simply don't work.

Americans know that something has gone terribly wrong, and they blame this country's leadership: the elite, the powerful, the decision makers – in government, in business and in civic society. This is completely appropriate, for who else should take the blame? And people are right to be angry and feel let down. Our failures fuel the populism on both the political left and right. But populism is not policy, and we cannot let it drive another round of poor planning and bad leadership that will simply make our country's situation worse.

To explain how and why this all happened, we tend to look for convenient reasons – some blame greed and "short-termism," some blame immigration and others blame the uncontrolled effects of new technologies, trade or China. Many of our citizens are unsettled, and the fault line for all this discord is a fraying American dream – the enormous wealth of our country is accruing to the very few. In other words, the fault line is inequality. And its cause is staring us in the face: our own failure to move beyond our differences and self-interest and act for the greater good. The good news is that this is fixable.

Some Americans think that the country's can-do attitude, innovative entrepreneurism and great resiliency, which served us so well in prior crises, still exist and will re-emerge to help us self-correct. At the other end of the spectrum, there are those who think we are simply a great empire whose glory days have passed and we should cede global leadership to China. These advocates would add that democracy itself does not work – our failures being prime evidence of democracy's ineffectiveness. Both views fall short.

The problems that are tearing at the fabric of American society require all of us – government, business and civic society – to work together with a common purpose. And that common purpose should be our ongoing quest to be a more perfect union and to maintain America's preeminent role in the world. To do this, we need to demand more of both ourselves and of our leaders. And we can't fix our problems if we don't ***acknowledge*** them and the damage they have caused. Hoping that things will self-correct is not a strategy – working on solutions is.

One last thing: The raw power of America is often represented by our incredible military might. In reality, however, our raw power emanates from our economic vitality and strength, which have always been predicated upon freedom, free enterprise, and the promise of increasing equality and opportunity for all. If income inequality is the fault line, returning to the basic morality at the core of America's founding principles can lead us to a common purpose and help bind us together again.

1. Laying out the problems is painful.

What actually are our problems? If we can agree on what they are, as well as their symptoms and their causes, then we can start to address them. I hope you find what I'm about to say as ***painful*** as I do.

While the average American high school graduates approximately 85% of its students, many of our inner city schools don't graduate half of their students and often don't give our children an education that leads to a livelihood. No one can claim that the promise of equal opportunity is being offered to ***all*** Americans through our education systems. Our healthcare system is increasingly costly – now over $11,000 per person, more than twice our global competitors. In addition, almost a decade after the adoption of the Affordable Care Act, over 30 million Americans still don't have any medical insurance. And, shockingly, life expectancy has gotten worse – particularly for poor and minority communities – nutrition and personal health aren't being taught at enough schools, and obesity, a main driver of diabetes, cancer, stroke, heart disease and depression, has become a national scourge. Our education and health issues come together in this alarming statistic: Seventy percent of today's youth (ages 17-24) are not eligible for military service, essentially due to a lack of proper education (basic reading and writing skills) or health issues (commonly obesity or diabetes).

Of course, there's a litany of other problems. I'll give some examples, but if I tried to address them all, this letter would become a book. We have a litigation and regulatory system that is costly, crippling small businesses with red tape and bureaucracy; terrible infrastructure planning and investment; and huge waste and inefficiency at both the federal and state levels. We have failed to put effective immigration policies in place; our social safety nets are poorly designed; and we fail to properly fund pension obligations. The growth in American incomes from 1980 to 2000 was healthy, and for the lowest and second-lowest quintiles, it was 18% and 19%, respectively, both cumulatively and inflation-adjusted. Growth slowed dramatically in the decades from 2000 to 2019, but it was the worst for the lower two quintiles, which were up only 1% and 8%, respectively. Income inequality has gotten worse. Nearly 30% of American workers earn less than $15 an hour, which is barely a living wage even if two adults are working in a family of four. Another key driver of growth has dropped over the past 20 years: Labor force participation of prime working age men peaked at 92% in 2000; in 2020, it was 88%. If we returned to the peak year, 2 million more men would be working. (An estimated 1.6 million Americans were addicted to opioids in 2019, which some studies show is one of the major reasons why men aged 25-54 are permanently out of work.)

In addition, 30% of Americans don't have enough savings to deal with unexpected expenses that total as little as $400, such as medical or car repair bills. This obviously adds to the economic anxiety of our lower-paid people.

Trillions of government dollars were spent on social programs even before these latest crises – clearly, our broken systems leave too many of our fellow citizens trapped. Simply put, the social needs of far too many of our citizens are not being met. And, surprisingly, approximately 25% of those eligible for various types of federal assistance programs don't get the help to which they're entitled.

Governments, both federal and state, fight to keep military bases open that we don't need and Veterans Affairs hospitals functioning that are broken – making the military more costly and less effective. Our shortcomings are not just about inefficiencies; they border on being immoral. In an incredibly depressing story, former Secretary of Defense Bob Gates describes how Congress took years longer than it should have to approve the building of U.S. Army personnel carriers that we needed in Iraq and Afghanistan to protect our soldiers from improvised explosive devices. While we dallied, many of our soldiers died or received terrible lifelong injuries. Although the government does certain things well, no one believes that it does most things well or that it gives an honest accounting of what it does do. We merely throw up our hands in frustration.

All of this broken policy may explain why, over the last 10 years, the U.S. economy has grown cumulatively only about 18%. Some think that this sounds satisfactory, but it must be put into context: In prior sharp downturns (1974, 1982 and 1990), economic growth was 40% over the ensuing 10 years. Had we had 20% more growth, our GDP would have added $3 trillion, which certainly would have driven wages higher and given us the wherewithal to broadly build a better country. Tax receipts would have been higher, and we easily could have afforded better social safety nets.

Anemic growth may account for our worsening productivity and income inequality. Included among the common explanations for this growth is that "secular stagnation" is the new normal or that there is a "savings glut." Faster growth would not only have spurred higher incomes, more jobs and increased opportunities but also would have created far more consumption and increased demand for investment, eliminating any potential "savings glut" or secular stagnation.

It is hard to look at these issues in their ***totality*** and not conclude that they have a significant negative effect on the great American economic engine. My view is if you add it all up, this dysfunction could easily have been a 1% drag on our growth rate. And, unfortunately, our extraordinary strengths as a nation cover up our weaknesses. This is the new normal – and it does not need to be this way. We should first look at how and why we became so inept at public policy.

2. Why did — and didn't — these failures happen?

Before we discuss how to fix our problems, it would be helpful to understand *why* some of them happened – and why we failed to design and implement good public policies. Clearly, increasing political partisanship – possibly structural – deserves part of the blame, but I'll leave that subject to others. It's also clear that our failings are not deliberate since no one wants these terrible outcomes. What has changed, however, is the scale of our challenges: They are bigger, global and increasingly complex, and they are happening in a world that is transforming itself far more rapidly than before. History teaches us that as a successful society ages, the common social purpose that binds it becomes less important. Instead, the society becomes more balkanized and often is crippled by powerful agendas of special interest groups – even if they all have good intentions. Let's examine some of the reasons why we have failed to design effective policies.

We are hampered by short-term thinking that's never comprehensive.

As a nation, we don't think long term, which hampers our ability to design proper policies that are based on thoughtful analysis. In my view, we don't perform the deep analysis required to fully understand what we're trying to solve. One of the reasons for this is that our outlook is often too limited; i.e., examining only how things have changed year-over-year or even quarter-over-quarter. We frequently fail to look at trends over a multi-year period or across decades – and we miss the forest for the trees.

When you step back and take a ***comprehensive multi-year view*, considering the situation in its *totality*, it is the *cumulative effect*** of many of our policies that has resulted in our present-day failures.

We are over-reliant on economic models and use them inappropriately.

Economic models are a great discipline that force you to think through the interplay of many factors, often over many years. Unfortunately, however, a lot of people use models like they do certain facts: to justify what they already believe. While we should definitely use models as tools, they should not be determinative, as they simply cannot account for much of humankind.

Certain pivotal factors are too complex or qualitative to incorporate into a model. In evaluating a company or the economy, for example, models quite often fail to properly account for culture and morality, the character of players involved, the increasing importance of education and skills, the value of dignity of work, the power of self-confidence as a secret sauce and the emergence of new technologies, just to name a few.

Even worse, many models use inputs that are so inaccurate that their outputs cannot be remotely relied upon. For instance, accounting itself (particularly government accounting) may be the worst culprit. Good investments are treated as expenses (including education, R&D and infrastructure) – indistinguishable from incarceration costs and homelessness. And incredibly, federal government budgeting rules, like PAYGO (or Pay-As-You-Go) or budget caps, mandate that many expenses have to be offset by revenue increases or have to be traded off against other priorities. The economy is frustratingly complex, and many times overusing models devalues basic commonsense.

We cloud debate with unfair thinking and arguing.

One of the best pieces of advice I have ever received was that people should use their intelligence to seek out the answers, not to justify what they already think or to win the argument. Here are some of the favorite tricks people use to win the argument and obviate issues:

- **Presenting issues as if they are binary.** This is a habit of sloppy thinking. Two of my favorite quotes illuminate this. One by Albert Einstein: "Everything should be made as simple as possible, but not simpler." And the second by H.L. Mencken: "For every complex problem there is an answer that is clear, simple and wrong." We frequently seek out convenient and simplistic answers, which are often wrong. The same is true for how we listen. Instead, we should try to find common ground with parts of someone's argument as opposed to rejecting the entirety of it offhand.
- **Creating and blaming scapegoats** like trade, China, immigration or capitalism. While scapegoating is easy, it mostly hides the truth – in fact, when you dig a little deeper (which we do in the following pages), other causes, possibly self-inflicted, become clear.
- **Unfairly assigning motives to people,** which may or may not be true. The goal is simply to denigrate an individual and/or win an argument – but this tactic has nothing to do with the actual facts.
- **Creating strawmen** (representing your opponent). This strategy makes it easier to attack foes for things they did not actually think or say.

Media hype and people's willingness to be weaponized derail thoughtful strategies.

Much has been said about the role of social media, but some things are clear. Most media and individuals barely have time to focus on the issues – and often default to overly simplistic, binary and incorrect conclusions that neatly fit into false political narratives. The urgency of ***today*** and the hyperactive and frequently hysterical focus on irrelevant issues crowd out thoughtful strategy and policy for ***tomorrow***. Lack of civility and humility make it hard to work together and to respect each other. Moral indignation is blinding – it stops you from trying to agree on what the problems are; it disguises itself as policy, and it turns expertise into elitism.

I am often surprised how people allow themselves to be completely riled up – yes, it happens to me, too. And when politics and media meet, we are whipsawed by false arguments of fanatics, the certitude of ideologues and cycles of intolerance. We all should try not to be drawn into this vortex.

We are stymied by self-interest, selfishness, and the buildup of bureaucratic plaque and institutional sclerosis.

Now willingly, I'm about to go down a slippery slope. I'm going to cite some very specific examples, but I essentially apply them to all of us and make my point as simply and strongly as possible: We are bogged down, sometimes crippling our nation, because of self-interest and the associated bureaucracy and bad thinking that follow. Much of this is not done deliberately – it's just built up over time – like arteriosclerosis. Historians sometimes point to this disease as a cause of the decline and fall of great empires.

This self-interest is virtually everywhere. There are 17,000 registered lobbyist contracts for special interest groups in Washington, D.C., including business-related groups and banking and financial services. We all deserve our share of the blame for using the balkanized government, bureaucracy and lack of transparency to further our own interests – not necessarily the country's. This includes business, unions, state and local governments, and individuals. All of us failed to properly heed President John F. Kennedy's appeal: "Ask not what your country can do for you – ask what you can do for your country."

For years, business, government and community leaders, including myself, voiced concerns about the inequities and other crises in our economy and communities. Business did not cause many of these societal issues – large companies, generally, pay their workers a higher-than-average salary, offer more training, provide more extensive insurance and medical and pension benefits for their employees and fundamentally drive our country's growth and competitiveness, as these companies account for approximately 80% of capital expenditures and R&D. Frankly, we punted too much of the responsibility to our government. But we are partly responsible – for we prioritized shareholder interests and sometimes narrow self-interests over creating broader opportunity for all in America. Successful businesses can literally and figuratively "drive by" our worst problems (think inner cities) and still thrive. These large companies can and should be more aggressively part of the solution because they can uniquely help with job planning, skills training, infrastructure investment and community development. And doing so, over the long run, is both morally right and commercially right because it will be good for business.

State and local governments are equally to blame. Take, for instance, five states (California, Connecticut, Illinois, New Jersey and New York) that continue to fight for unlimited state and local tax deductions (because those five states reap 40% of the benefit) even though they are aware that over 80% of those deductions will accrue to people earning more than $339,000 a year.

Few of our institutions are blameless. Hospitals fighting to keep their prices unpublished and teachers' unions arguing to continue to keep failed schools open are just two such examples.

Then there's our tax code – buried in it are an extraordinary number of loopholes, credits and exemptions that aren't about competitiveness or good tax policy: Private equity, venture capital and real estate still get carried interest, and sugar and cotton, for some unknown reason, still get government subsidies. Suffice it to say, industry gets its share of tax breaks and forms of protection from legitimate competition.

Our public policy failures are not partisan issues.

Our problems are neither Democratic nor Republican – nor are the solutions. Unfortunately, however, partisan politics is preventing collaborative policy from being designed and implemented, particularly at the federal level. We would do better if we listened to one another.

Democrats should acknowledge Republicans' legitimate concerns that money sent to Washington often ends up in large wasteful programs, ultimately offering little value to local communities. They could acknowledge that while we need good government, it is not the answer to everything. Democrats could also acknowledge that a healthy fear of a large central government is not irrational (like a Leviathan).

Republicans need to acknowledge that America can and should afford to provide a proper safety net for our elderly, our sick and our poor, as well as help create an environment that generates more opportunities and more income for more Americans. Republicans could acknowledge that if the government can demonstrate that it is spending money wisely, we should spend more – think infrastructure and education funding. And that may very well mean higher taxes for the wealthy. Should that happen, the wealthy should keep in mind that if tax monies improve our society and our economy, those same individuals will be, in effect, among the main beneficiaries.

Democrats and Republicans often seem to be ships passing in the night – with both parties talking at cross purposes even when they may share the same goals. Compromise is not incompatible with democracy – in fact, compromise is a core principle of democracy. When major policies are enacted on a purely partisan basis (think healthcare and tax reform), it virtually guarantees decades of fighting. It's not unreasonable to think that major policies should be bipartisan or not at all.

We must remember that the concepts of free enterprise, rugged individualism and entrepreneurship are not incompatible with meaningful safety nets and the desire to lift up our disadvantaged citizens. We can acknowledge the exceptional history of America ***and*** also acknowledge our flaws, which need redress.

Our problems are complex and frustrating – but they are fixable with hard work.

If our Founding Fathers were here today, they would be very proud that the Constitution they enacted has survived, thrived and helped to build this great country. But I also believe they would be disappointed. Those leaders were students of history, society and economics (just read the *Federalist Papers*) and drew upon that knowledge to structure a government that would function properly.

Our country would do well to study the successes of the rest of the world. Germany and Switzerland have created impressive work apprenticeship programs; Singapore has developed effective healthcare programs; Hong Kong has excelled with infrastructure; and some countries, with no natural resources and starting from terrible baseline positions (think South Korea after the Korean War), have done a terrific job in growing their economies and lifting up all of their people. Another inspiring example is Ireland. After decades of sectarian strife and terrorism, a poor, male-dominated country was transformed. A few years ago, the country elected an Indian immigrant who is gay as Prime Minister – Ireland is now a melting pot with a thriving economy due to good government policies. Bad government is prevalent in some countries, and we would also do well to study those examples: Argentina, Cuba and Venezuela, to name a few – all countries with tremendous natural resources that allowed, in the name of their people, their economies to be destroyed.

Any economic society, not just capitalism, involves billions of decisions made by individuals and institutions every day. These interactions are complex and can operate in mysterious ways. Capitalism has lifted billions of people out of poverty. Capitalism, and the continuous and free movement of capital and, more important, of human talent, in the pursuit of happiness (the invisible hand of Adam Smith), creates a continuous exchange of information and ideas – and constant innovation. But, of course, capitalism has always had its shortcomings. Good government and the guardrails of properly designed laws and regulation have always been necessary for the process to work fairly and efficiently.

Fixing America's problems is going to take hard work. But if we divide them into their component parts, we will find many viable solutions. With thoughtful analysis, commonsense and pragmatism, there is hope.

3. We need a comprehensive, multi-year national Marshall Plan, and we must strive for healthy growth.

We need a coherent, consistent national strategy to match the severity of the existing structural challenges that are driving our country's racial and economic crises. Just as careful planning and analysis would have prepared us for the current pandemic, careful planning and analysis can address many of the challenges we face. These plans need to be comprehensive, integrated, sustainable and regularly reported on. If we throw a lot of money at infrastructure without fixing the regulations that cripple it, it won't work. If we throw a lot of money at education but don't report on the outcome (i.e., good jobs), we will lose credibility. Lurching from policy to policy and having boondoggles and special interest groups abound will make things worse. We need to do the right things and the hard things very ***competently***.

We need to recognize the essential and irreplaceable importance of healthy growth and our global competitiveness. The best way to address our problems, and perhaps the *only* way to solve them without accelerating inequality further, is to promote healthy economic growth. A healthy growth strategy should be the primary economic policy of both political parties. Healthy growth may be the only way out of our current situation (slow income growth and rapidly increasing debt). We must unleash the extraordinary vibrancy of the American economy. Economic growth will give us the wherewithal to deal with the issues stemming from inequality in ways that are sustainable. It is the engine that will drive and secure America's global leadership.

This can be a moment when we all come together and recognize our shared responsibility – acting in a way that reflects the best of all of us. During this terrible COVID-19 crisis, we are, in some ways, being forced to count on each other. It is moving to see the respect and gratitude that most of us now show our essential workers – and that is something we should do for *all* of our workers, *all* of the time. This crisis also reminds us that we all live on one planet. Let's hope that civility, humanity and empathy will drive us forward toward the goal of improving America. We have the resources, and the solutions are there – just waiting to be found.

4. We need to take specific action steps.

In this section, I offer my views and analysis on specific solutions to our problems. Neither the diagnosis nor the proposed cures are purely my own. Our nation's issues have been studied intensively by many people with deep knowledge. And given the space and other constraints of this letter, I admit to violating Einstein's maxim about simplicity. I do make some of these issues simpler than they are, sometimes by giving only conclusions instead of providing reasoned analysis.

In the following pages, we review 15 policies (many of which, of course, are interrelated) where we believe we need to – and can do – a far better job. We would do all of them if we could, but fixing even some of them will make a significant difference.

Training for Jobs: We need to build an education system that includes training for skills that lead to good jobs (and this will improve labor force participation).

Our high schools and community colleges (and all colleges) need to provide our youth with training for certified and apprenticed skills that lead to good paying jobs. With nearly 7 million job openings and 10 million workers unemployed in the United States, creating an effective training and retraining program is a high-impact opportunity. Business must be involved in this process, and it needs to be coordinated locally because that is where the actual jobs are. Proper training and retraining mean being sensitive to our rapidly changing technological world. Expanding digital skills and training opportunities for workers and students will be critical, as the pace of AI will likely accelerate to meet future business demands and foster innovation in high-risk jobs, especially across healthcare and the supply chain. Many students in our high schools and colleges are unaware that, with a little bit of training, they can qualify for jobs paying $65,000 or more a year. You can major in philosophy or history, but taking a few courses in coding will help to ensure you a good job. Our education system should bear responsibility for our children to graduate with an education that leads to a good livelihood.

Germany has one of the strongest education and training systems in the world, with about 1.3 million young people annually participating in paid apprenticeship programs that provide them opportunities to gain in-demand skills along with an education. Vocational school and apprenticeship programs work directly with local businesses to ensure students are connected to available jobs upon graduation. Germany's youth unemployment rate is one of the lowest in the world.

Many companies have numerous jobs for which a "college degree is required," but this often turns out to be unnecessary and even harmful. Much more can be done in terms of making a degree requirement truly relevant for specific jobs. Over 80 Business Roundtable member companies – and counting – are participating in a new multi-year targeted effort to reform companies' hiring and talent management practices to emphasize the value of skills, rather than just degrees, and to improve equity, diversity and workplace culture. The initiative will support measures that address inequity in employment practices, including how people are hired and how they advance, and it will work toward eliminating bias that may prove to be a barrier to hiring and advancement. According to a recent study, employers frequently require a four-year college degree for 74% of new jobs in America – this screening excludes roughly two-thirds of American workers, and its impact is most pronounced on minority applicants.

In addition to the Business Roundtable initiative, companies are partnering with educators in regions throughout the country. For example, in New York City, the New York Jobs CEO Council is working with City University of New York (CUNY) to develop new two-year associate degrees.

These degrees are explicitly designed to enable students to graduate with a marketable college degree (and paid apprenticeship experience) in two years, debt free and with an employment opportunity in an in-demand, high-potential field of their choosing.

One last point: Although there are wide variations across the United States, teachers in public institutions, on average, earn 33% less than their peers with equivalent degrees (college level and above) – this is the lowest ratio in the OECD (Organisation for Economic Co-operation and Development). While we should attack waste in the system, we should pay teachers more money and base their salaries upon clear standards that will measure success – not just graduation rates and standardized test scores but certification of skills – and lead to ***actual*** good paying jobs.

Paying for Jobs: We need to improve wages for low-skilled work (again, this would improve labor force participation).

Decades ago, an unskilled worker, who may not have graduated from high school but was willing to work hard, could get a job at a manufacturing plant that would soon lead to a living wage and the ability to earn a middle-class income. That may no longer be the case. Today, it may be that unskilled or low-skilled workers would not *naturally* earn a living wage. All jobs are good jobs: They bring dignity; people who start working generally continue working; and the first job is often the first rung on the employment ladder. Jobs also lead to better social outcomes – less crime, more household formation and less mental illness.

While a living wage differs by state, the national average is currently $68,000 a year for a family of four. With two adults working full time, each would need to earn $16.50 an hour to reach that level. We should strive to make every job generate a living wage — and do two things to accomplish this goal. First, we should, at the very least, increase the federal minimum wage and allow states, based on local conditions and unemployment rates, to make further adjustments. Simply stated, our policy goals should focus on maximizing incentives to get more people working while minimizing incentives for employers to lay off workers, especially low-paid employees.

Second, we should ensure that federal efforts, like the Earned Income Tax Credit (EITC) and the Child Tax Credit, are effective enough so that every job essentially pays a living wage. The higher wages resulting from these credits would go a long way toward improving our labor force participation, which is a key driver of productivity and economic growth.

Opportunities for Jobs: We need to make it easier for those with a criminal record to get a job (which will also improve labor force participation).

We need to reduce recidivism, reform the criminal justice system and eliminate barriers to a good job. One such barrier is a criminal record, which one in three adults (more than 70 million people) in our country has. Our criminal justice system disproportionately impacts people of color – Black adults are over five times more likely to be incarcerated than white adults. This is institutional racism in its clearest form. Reforms to the criminal justice system and business screening and hiring practices can open the door of opportunity to significantly more people. JPMorgan Chase supported a measure signed into federal law in 2020 restoring access to Pell Grants for incarcerated individuals, which allows them to pursue postsecondary education in prison and increase employment opportunities after their release. Other steps that we can – and must – take are: adopting "ban the box" measures for employment applications and reforming clean slate laws so anyone with a record of minor offenses can more easily qualify for a job. JPMorgan Chase has taken many of these steps, and, in 2020 alone, we hired more than 2,000 people with a criminal background.

America believes in second chances and redemption. Getting a second chance will give people dignity and enable them to earn a higher lifetime income while reducing recidivism and all of its related costs.

We need to reform and improve our social safety net programs (which can also improve labor force participation).

Our varied and various public assistance programs (Medicaid, food assistance, income support, unemployment, housing and utilities benefits for individuals who cannot work, due to disability or childcare responsibilities, to name a few) are a complete mishmash of uncoordinated federal, state and local policies. People qualifying for public benefits may be eligible for various programs but often don't apply because they are unaware, ill-informed or unable to navigate the complexities. These programs frequently have different applications and application processes, including different places to apply, with benefits often disappearing at different income levels and at different speeds. It is accurate to say that the complexity and variability in eligibility rules have negative consequences for both program administration and access to assistance. For example, beneficiaries often have to provide the same information for different federal programs and visit multiple offices in order to apply. The Government Accountability Office has provided reports about this maze of programs to Congress; in addition, the Center on Budget and Policy Priorities has created guides for state and local use to help streamline the application and enrollment process, utilizing eligibility determinations made by other programs to jump-start approvals.

Public assistance programs need to be coordinated, consolidated and connected to trends in the larger economy, as well as to the individual's transition to employment. For example, unemployment insurance should have automatic stabilizers that increase benefits when and where jobs are lacking and reduce them when and where jobs are abundant. Application to all social welfare benefits should be available through one single form and phased in and phased out on a common grid, not on a cliff. Coordinated with an individual's transition to work, benefits should gradually be reduced, making them a true safety net.

Finally, providing affordable childcare programs or lowering the starting age for public school would make it far easier for parents to work. Some countries are now implementing universal access to preschool for children at three years of age. This is a wonderful policy. It makes childcare less expensive and has proved to be extraordinarily good for student education over the short and long term. Parents like it, too. Of course, the benefits may not be fully realized for years, but this is precisely the type of long-term thinking in policymaking that we need. Women, in particular, suffered in the COVID-19 crisis as an estimated 2.5 million left the workplace, largely because they had to become full-time caregivers for their children or elderly parents. Many of the programs listed above will make it easier for women to return to the workforce if they so choose.

We need to try to make the healthcare system work better (better health drives both productivity and labor force participation).

We have the best healthcare in the world in terms of doctors, hospitals, and pharmaceutical and medical device companies, but we certainly do not have the best outcomes. As I discussed earlier, 30 million Americans do not have any insurance; obesity, high blood pressure, asthma, diabetes and other conditions are rampant; and costs are far too high with little transparency into their calculation. Annual medical costs per person in the United States are now $11,000 versus $4,000 for other developed nations. There are ways we can make significant improvements. Here are a few: allow bigger incentives for becoming and staying healthy; eliminate bureaucracy and waste in the healthcare system, including administrative complexity and fraud (this represents approximately 25% of total healthcare spending in the United States); empower employees to make better choices through more transparent employer plan pricing and options that include the actual cost of medical procedures; eliminate surprise bills (these usually come from unexpected out-of-network services); develop better corporate wellness programs that target obesity and smoking; create better tools to enable comparison shopping for nonemergency care and help manage healthcare expenses; and reduce the extraordinary expense for unwanted end-of-life care. There should be national, not state-by-state, insurance exchanges, which would be far more efficient. And exchanges should also offer a low-cost, catastrophic-only insurance package as an option. Plus all healthcare data should belong to the individual, not to various healthcare companies. Another obvious incentive is to dramatically enhance how effectively wellness, nutrition, health and exercise are taught in K-12 classrooms nationwide.

We need proper, rigorous and multi-year budgeting, planning and reporting.

Companies perform extensive budgeting, planning and reporting, some of it conducted on a multi-year basis. Real investments – in training, data centers, manufacturing plants and other categories – are needed on a multi-year basis and cannot be stopped and started without incurring enormous additional costs. But this stopping and starting is exactly what takes place in the federal government, which inevitably leads to waste and inefficiency. One striking example: The military estimates that it spends more money per year on procurement than is necessary because of this inefficiency. In total, the stop-start nature of our government's budgeting processes most certainly costs us tens of billions of dollars a year in complete waste.

Proper budgeting and planning – on a multi-year basis – should be implemented at all levels of government. It is particularly important that most federal programs – think military, infrastructure and education – have good long-term plans and be held accountable to execute them.

When the government talks about spending money, it should not lead with the amount spent or budgeted to be spent – as if that's the measure of success. Instead, the expected outcome of the spending and then the ***actual outcome*** should be described. We desperately need honest and transparent accounting, accountability and evaluation about everything we fund with government dollars. Every department should have an outcome report.

It would be beneficial to review government accounting practices and look for a better way to differentiate between investments and expenses, for instance. There are also examples that show it would be good if the government conformed to public company accounting, particularly around how it accounts for loans and guarantees.

An honest accounting would go a long way to rebuilding trust in government – and in government spending.

We need proper management and periodic review of regulatory red tape and bureaucracy.

The American can-do system is now being bogged down in a maze of regulatory red tape and bureaucracy. All you need to do is to take 10 small business owners out to lunch and ask them what they need to do to meet local, state and federal regulations, and you will understand the problem. And while we all want a legal system that brings justice to all our citizens, our litigation system now costs 1.6% of GDP, 1% more than what it costs in the average OECD nation. And most businesspeople think that it is excessively litigious, slow, and somewhat arbitrary and capricious. One example, which works in many other countries, is to have the losing party pay in some circumstances. Clearly, this would have to be done in such a way as to ensure that the aggrieved parties are not denied appropriate access to our justice system.

The cost of the now over 1 million federal regulations is estimated at approximately $14,000 per household. And while we want good regulations and good "guardrails," there is an excessive amount of licensing, paperwork, employment laws and insurance requirements, and anyone who deals with the application process knows how wasteful and unnecessary it can be. Red tape like this cripples small businesses and, worse, reduces the formation of new enterprises. Very often local regulations are simply a form of low-level corruption in which bureaucrats are paid to slowly … move … paper … around.

Smart regulation includes continual improvement, constant cost-benefit analysis and a review of purpose and objectives, which are reported honestly. Bad regulation often stifles competition – think of the airlines and telecom industries before they were deregulated.

Here are few examples. The Federal Aviation Administration is unable to adopt new technology for air traffic control, which most of the world has already adopted, that would reduce the average flight time by more than 10 minutes and reduce greenhouse gases by 12%. President Dwight D. Eisenhower's Federal-Aid Highway Act of 1956 was 29 pages long and originally authorized $25 billion for the construction of the interstate highway system during a 13-year period, creating a 41,000-mile interstate highway network. And 13 years later, the interstate highway system was largely built. Fast forward to current times, it took 10 years and 47 local, state and federal approvals to rebuild the Bayonne Bridge connecting Staten Island and New Jersey, which was badly in need of replacement and was, in fact, quite dangerous to cross. If this is the way we are going to go about fixing our infrastructure, we will never get it done. And it's not just the time element – long delays increase the costs and risks involved.

We need to properly invest, on an ongoing basis, in modernizing infrastructure.

Virtually everyone agrees that we have done a woefully inadequate job investing in our infrastructure – from highways, ports and water systems to airport modernization and other projects. One study examined the effect of poor infrastructure on efficiency (for example, poorly constructed highways, congested airports with antiquated air traffic control systems, aging electrical grids and old water pipes) and concluded this could all be costing us hundreds of billions of dollars per year. Some economists estimate that a proper infrastructure investment plan could add 0.3% growth annually to our GDP – and it would improve competitiveness across many industries while opening up new investment opportunities.

Such a plan would also create many new jobs with competitive salaries and spur workforce innovation. It could intentionally provide employment opportunities for disadvantaged and young workers, including those with a criminal background. There are many efficient ways to properly build and finance infrastructure, from the local, state and federal level or public-private partnerships, which have the added benefit of increasing the investment discipline. It is important to point out, however, that building ineffective "bridges to nowhere" while temporarily creating jobs is actually a huge value destructor. This kind of waste would ultimately undermine Americans' faith in our system.

We need proper and consistent tax and fiscal policy — done right, it can actually help drive healthy growth and improve income equality.

It would be good to have a tax and fiscal ***strategy***, which is premised upon maximizing healthy growth and redistributing income effectively. It would include the following features:

1. A system that is consistent, highly transparent and as simple as possible.
2. A tax collection system that enables collection of all taxes owed. My view is that everyone should pay the taxes they owe, and it should be strictly enforced. Many estimates project that with increased headcount and greater input from data scientists, we could collect between $30 billion and $100 billion more per year.
3. A target for what the federal government should expect to collect in taxes over time. A good starting point would be 18% of GDP (it has been running at an average of about 16% over the last decade). In good times, we should run a small surplus (~1%), and in bad times, we should have a small deficit (~4%-5%), such that debt to GDP stays fairly constant over time. A side benefit of this is that the government would know that it would have more money to spend – but only if we grow.

We should think about good taxes and bad taxes in terms of spurring growth. Taxing primary capital formation or labor are growth reducers. Having capital retained and reinvested in the United States should be a ***sine qua non*** for healthy growth, and that means that our business tax rates should be globally competitive. Today, the average corporate tax rate for OECD nations is around 22% versus our 21%. The retention and reinvestment by businesses of capital in the United States is ultimately the primary driver of productivity and growth. Even if that capital is distributed in dividends or stock buybacks, it is simply being put to a higher and better use – this is completely normal capital reallocation. The free flow of money capital and human capital is fundamental to our growth and innovation (and fundamental to our freedoms as individuals).

Unfortunately, taxes that minimize damage to growth would involve taxing high incomes. The wealthy are less likely to complain about taxes if the money is ***actually used*** to help the less fortunate or help build a better country. Even with the redistribution of income, there will be items that help growth and items that hurt growth. Redistributing income through the EITC will be money spent to improve labor force participation. Redistributing money to inefficient and poorly run bureaucracies will not improve growth.

In addition, there is a maze of tax breaks in the tax code that should be eliminated. There are hundreds of examples, but I will mention just a few: carried interest, the special tax breaks for race cars, private jets and horse racing, and a special land conservation tax break for golf courses. Hidden tax breaks have the additional stigma of being perceived by the American public as just another example of institutional bias and favoritism toward special interest groups. If the wealthy paid more in taxes and the money was put to good use, they would be the main beneficiaries of a stronger economy.

Due to government stimulus packages as a result of the COVID-19 crisis, external government debt to GDP is now a high 102%. We can afford that percentage and even more, particularly because interest rates are low. But in 10 to 20 years, mostly because of out-of-control healthcare expenses, the debt-to-GDP ratio will start to rise dramatically – and at some point, that will become a problem. The sooner we deal with it, the better. The best way to counteract that is with healthy growth. After World War II, in 1946, the United States still had a 120% debt-to-GDP ratio, which over the next 10 years fell to 60%. This was not because the government raised taxes or dramatically cut expenses but because the country grew at almost 4% for the decade.

We need intelligent industrial policy.

Being a free market economy, the United States has never been a great believer in government-driven industrial policy. But we have done it and ought to do it intelligently in discrete areas that make sense (and where free markets alone don't necessarily provide needed products or services), such as rural broadband, healthcare and cybersecurity. We also need to boost our investment in R&D; we're now #8 in the world in terms of GDP spend on R&D. Government R&D could focus on AI and quantum computing, climate innovation and other areas.

We need thoughtful trade policies.

The United States needs to take a leadership role in establishing global free and fair trade rules. If we don't, they will likely be established to the detriment of American business. Free and fair trade rules do not have to be completely equivalent and reciprocal – just fair. Working with our allies and other countries, we should negotiate the gold standard of trade – not just rules around tariffs but fair regulations that address subsidies to state-controlled enterprises and other forms of unfair competition, bilateral investment and protection for intellectual property, among other issues.

In addition, we should recognize that trade, while positive for the United States as a whole, has caused the loss of jobs, both in specific geographies and in specific industries. Americans who have been affected by these disruptions need better support in terms of income assistance, retraining and relocation.

We need to maintain a strong financial system.

The United States has the best financial system in the world. This financial system encompasses asset managers, investors, banks, investment banks, private equity, hedge funds, pension plans and shadow banking. It is protected and enhanced by the rule of law (including banking laws), and it offers investor protections and transparency around governance and accounting and provides complete and free access to global investors. While nothing is ever perfect and can always be improved upon, most of the world would give an arm and a leg for our system.

The free flow of credit and investments – disciplined capital allocation – is critical to being globally competitive. It is the flywheel of the economy as capital is seeking out good investments (across the risk spectrum) and individuals and ideas that drive growth and innovation. A country's economy can hardly be better than its financial system and vice versa.

The United States' extraordinary and open economy gives us the extraordinary privilege of being the world's reserve currency. The U.S. dollar is the currency of choice for the majority of trade transactions, and it is held by governments, central banks and corporations as the reserve currency (approximately $7 trillion, or 60% of total world reserves). This helps provide cheaper financing for the United States and gives us enormous clout in foreign and economic policy. However, we should not overly "weaponize" the dollar, and we should use this authority judiciously and in support of building a healthy, global economy (see accompanying feature that follows).

The United States has the best financial system in the world, and we must strive to maintain it.

The U.S. Dollar Is the World's Reserve Currency for a Reason

While there may be faith involved, the U.S. dollar is the reserve currency of the world for a reason. First, the dollar is supported by the full faith and credit of the United States. The dollar, which is a liability of the Federal Reserve (i.e., the federal government) in digital or in currency form, is always supported by an asset - and that asset is generally Treasury bonds. Treasury bonds are supported by the full taxing authority of the U.S. government, which, in turn, is supported and paid for by the full power of the U.S. economy. These assets and liabilities, including the economy, are supported by powerful institutions, the rule of law and, ultimately, the full might of the U.S. military. Of course, a central bank can debase a currency, but our central bank, the Federal Reserve, is meant to protect the currency's value. Faith is only a small part of these calculations.

Second, and equally important, the U.S. dollar is the world's reserve currency because anyone who legally has a U.S. dollar can move it freely around the world, buy and sell what they want, and invest in the United States. By comparison, the Chinese currency, the renminbi (RMB), cannot be freely moved around the world; it can leave China only in limited amounts and can be invested only as the Chinese see fit. It is subject to their laws and regulations. While the Chinese have done a good job building their economy and are slowly moving toward a more transparent society and financial system, they are a long way from having a currency that is fully "convertible" like the U.S. dollar.

As an aside, JPMorgan Chase moves more than $8 trillion (99% digital) a day for more than 52 million payments (94% digital). Approximately 98% of value is done the same day, 78% is done in real time and 20% is executed the same day. When these dollars are moved, they go through extensive screening for risk and fraud matters. While systems can always be improved upon, this process seems to be safe and efficient.

We need proper immigration policies.

Thirty percent of foreign students who receive an advanced degree in science, technology or math (300,000 students annually) have no legal way of staying here, although many would choose to do so. Most students from countries outside the United States pay full freight to attend our universities, but many are forced to take the skills they learned here back home. From my vantage point, that means one of our largest exports is brainpower. We need more thoughtful immigration policies that will prevent such a brain drain. In addition, 43% of the growth of our workforce over the past 10 years has come from immigrants. Today, we have 10 million undocumented people living and working in our country; on average, they have resided in the United States for more than 15 years. Most Americans would like a permanent solution to DACA (Deferred Action for Childhood Arrivals), as well as a path to legal status for law-abiding, tax-paying undocumented immigrants. Americans also would like to see, and deserve to see, border security, and there would be far more support for immigration reform if it included proper border security. These issues are tearing the body politic apart. The Congressional Budget Office estimates that the failure to pass immigration reform earlier this decade is costing us 0.3% of GDP a year. Immigration has been one of the great strengths of this country – and we should never forget that.

Affordable housing remains out of reach for too many Americans.

Prior to the COVID-19 pandemic, the demand for affordable housing significantly outpaced supply in nearly every U.S. county. In addition, rising home prices made it increasingly difficult for individuals and families to live near their workplace or within easy access to grocery stores, pharmacies and other essential services. There are many legislative actions that could dramatically increase the availability and affordability of housing (offering tax credits and changing local zoning laws are two examples). While the subprime mortgage crisis and the recession that followed were terrible, the overreaction to it made housing too costly for many individuals (without creating more safety). Excessive origination, servicing and securitization requirements have increased the cost of the average mortgage by approximately 20 basis points. This has mostly affected smaller mortgages and lower-income individuals who have a slightly higher delinquent rate – but who still deserve a mortgage. In fact, J.P. Morgan analysis shows that, conservatively, more than $1 trillion in additional loans might have been made over a five-year period had we reformed our mortgage system. Our analysis also indicates that the cost of not reforming the mortgage markets could be as high as 0.2% of GDP per year. We believe that percentage includes an additional $500 billion a year in mortgages that could be written predominantly for lower-income households. This alone could dramatically lead to growth in America and help lower-income individuals build wealth.

We need to implement several additional programs and policies specifically to assist Black and Latinx communities.

We need to address hiring and advancement targets, help develop minority-owned small businesses and improve financial education products for the unbanked. In addition, minority-owned small businesses, which employ nearly 9 million people and generate $1 trillion in annual economic output, have been hit especially hard by COVID-19 and will need serious assistance going forward, including capital to restart and run their businesses. We should consider requiring companies, such as grocery stores, pharmacies and other retailers, to provide locations in low-income neighborhoods, as banks must do (this would reduce the cost of goods purchased by minority individuals and increase local hiring and engagement). These efforts would be a form of redress for the low-income community that is sustainable and reinforcing.

Companies can go further by building a more diverse and inclusive workforce, including in their top ranks; tying executive compensation to diversity commitments; developing a more robust pipeline of diverse talent; improving supplier diversity; cutting ties with customers who make racist comments and treat employees disrespectfully; helping young men and women of color get ahead personally and professionally; and increasing the diversity of businesses with whom they partner. Above all, it means building a company culture that respects and listens to everyone. Companies might not always get it right, but they should keep trying. The feature in The Path Forward in Section I outlines many of the specific efforts underway at JPMorgan Chase to help advance racial equity.

The cumulative, multi-year effect of doing just some of the measures mentioned above would lead to a healthier, more resilient and robust, and fairer America.

It is my belief that the underlying U.S. economy is so strong that it could overcome many of the things we have failed to do and still grow at 2%. If we could grow at 3% versus 2% over a 10-year period, that would lead to $2.3 trillion in additional GDP by the end of the decade or an increase in household income of about $18,000. A 3% growth rate is what we used to have – and it is achievable again. This growth will help all Americans, but particularly poor and disadvantaged citizens (even before implementing special assistance programs) by increasing opportunities for better jobs, higher incomes, affordable housing and other benefits.

We owe it to ourselves to restore our competitiveness, our common purpose and our true sense of civility in the pursuit of building a more perfect union.

5. America's global role and engagement are indispensable to the health and well-being of *America*.

One of the biggest uncertainties today is America's role on the world stage. A more secure and prosperous world is not only good for the rest of the world but also for our country's long-term security and prosperity. Our role in building that more secure world has been, and will likely continue to be, indispensable. It is a complex role, and if we don't fulfill it, others will – and not with our best interests in mind. It is even more complex now because since the Cold War, the United States has not had to deal with another great world power. Now we have the relentless rise of China, which will likely overtake America in the next 20 years as both the world's largest economy and the largest financial market. Throughout history, the rise of a second great power has always been disruptive. Increasingly and appropriately, most of the world, including Americans, looks at our global position, particularly our economic and military strength, and compares it with that of China. There is no question that the relationship with (and intense competition between) the United States and China will be the most critical relationship for the next 100 years so it is important to deeply understand all of China's strengths and weaknesses.

China has done a good job in building its economy – but it still has a way to go.

Over the last 40 years, China has done a highly effective job of maneuvering itself to this point of economic development. China's leadership has been strategic, consistent and coherent. And unlike developed democratic nations, it can both macromanage and micromanage its economy and move very fast. Government officials can pull, in a coordinated way, fiscal, monetary and industrial policy levers to maintain the growth and employment metrics they want, and they have the control and wherewithal to do it. Unlike Western democracies that frequently, and increasingly, have changes in government leadership and policy approaches, China's system allows for consistent leadership and consistent execution of policies and regulations over the long term. But their most important economic advantage is their huge home market, which they can use to develop their economy and their companies. They have, as a result, been able to use this home market to subsidize some very competitive industries.

But in the next 40 years, the country will have to confront some serious issues: The Chinese lack enough food, water and energy to support their population; pollution is rampant; corruption continues to be a problem; state-owned enterprises are often inefficient; corporate and government debt levels are growing rapidly; financial markets lack depth, transparency and adequate rule of law; income inequality is higher than in the rest of the world; and their working age population has been declining since 2012. America's demographics, by contrast, will remain strong, particularly if we continue to have healthy immigration. China will continue to face pressure from the United States and other Western governments over human rights, democracy and freedom in Hong Kong, and activity in the South China Sea and Taiwan.

Asia is a very tangled part of the world, geopolitically speaking. Unlike America, which is at peace with its neighbors and is protected by the Atlantic and Pacific oceans, many of China's neighbors (Afghanistan, India, Indonesia, Japan, Korea, Pakistan, the Philippines, Russia and Vietnam) are large, complicated and not always friendly to China – in fact, China has had border skirmishes and wars with India, the Soviet Union and Vietnam since World War II. These neighbors do not all look at the rise of China as being completely beneficial.

Autocratic and authoritative leadership works well when you can manage top down and you are starting from a very low base. China's recent success definitely has its leadership feeling confident. Many believe that America is in permanent decline and that democracy is failing. Regardless of their opinions, we should neither over- nor underestimate them. Only 100 million people in China effectively participate in the nation's one-party political system. No other developed nation has such low participation. Growing middle classes almost always demand political power, which helps explain why autocratic leadership almost always falters in a larger, more complex economy. Under autocratic leadership, a major risk is the allocation of economic assets (capital and people), which are, over time, used to further political interests, leading to inefficient companies and markets, favoritism and corruption. In addition, autocratic leadership diminishes the rule of law and transparency – damaging the ability to create a well-functioning financial system (this certainly restricts the internationalizing of the RMB).

Disruption of trade is another risk China faces. The United States' trade issues with China are substantial and real. They include the theft or forced transfer of intellectual property; lack of bilateral investment rights, transfer of ownership or control of investments; onerous non-tariff barriers; unfair subsidies or benefits for state-owned enterprises; and the lack of rapid enforcement of any disagreements. Our position is supported, though, in an uncoordinated way, by our Japanese and European allies. We should expect China to do only what is in its own self-interest. Near term, we expect challenge and conflict to characterize the relationship between China and the West over a range of economic, human rights and strategic issues. There may, however, be areas where we will simply never agree. As the two largest economies in the world, China and the United States should continue to have a long-term interest in collaborating where we can on critical global issues, including climate change, global health and stability on the Korean Peninsula. This will not be easy, but we will need to mature the management of this relationship so we can deal head on with our differences while continuing to seek common ground on our common challenges.

China does not have a straight road to becoming the dominant economic power. To put this in perspective, America's GDP per person in 2019 was $65,000 and China's was $10,000. Even if we do a rather poor job at managing our economy (growing at 2%), our GDP per person in 20 years would be $85,000. And if the Chinese do a good job managing their economy, their GDP per person in 2040 would still be under $35,000. While China is well on its way to becoming a fully developed nation, it may face more uncertainty and moments of slower growth in the future (like the rest of us) than in the past. For the near term, if China and the United States can maintain a healthy strategic and economic relationship, it could greatly benefit both countries – as well as the rest of the world.

America is in a very strong position.

We have the resources to emerge from this latest economic crisis as a stronger country. Sometimes we forget how blessed we already are. America is still the most prosperous nation the world has ever seen. We are blessed with the natural gifts of land; all the food, water and energy we need; the Atlantic and Pacific oceans as natural borders; and wonderful neighbors in Canada and Mexico. And we are blessed with the extraordinary gifts from our Founding Fathers, which are still unequaled: freedom of speech, freedom of religion, freedom of enterprise, the sanctity of the individual, and the promise of equality and opportunity for all. These gifts have led to a bold and dynamic economy – one that nurtures vibrant businesses large and small, exceptional universities and a welcoming environment for innovation, science and technology. America was an idea borne on principles, not based upon historical relationships and tribal politics. It has and will continue to be a beacon of hope for the world and a magnet for the world's best and brightest.

America has strong and deep economic and geopolitical relationships with a large part of the world – mainly, but not exclusively, with our allies, including Canada and Mexico, countries of the European Union, Great Britain, Japan, South Korea and Australia, to name a few. With these allies, we respect the values of democracy, individual rights and economic freedoms. Collectively, we need to reassert our foundational strengths, which are grounded in our common principles, mutual trust and cooperation, and shared prosperity. As a nation, America needs to reassert its confidence in democracy and re-establish that it can function competently in the interest of our people. Fundamentally, we need not fear the success of China; we need to fear only our own failure because that is the only thing that will truly limit us.

America should engage and exercise its power and influence – cautiously, judiciously and respectfully – with various international organizations (the North Atlantic Treaty Organization, the United Nations and the World Trade Organization). While there are many legitimate complaints about these organizations, the world is better off with these institutions. Americans should understand that global laws, standards and norms will be established whether or not we participate in setting them. However, it is certain that we will be happier with the evolution of global standards around trade, immigration, corporate governance and other important issues if we help craft and implement them. We should not abdicate this role – if we do, that void will simply be filled by China and others. Our engagement and leadership in the world are as important for ***our country*** as they are for the rest of the globe.

My fervent hope is that America will roll up its sleeves and bring bold leadership to our self-inflicted problems. Business and government collaborating together can conquer our biggest challenges – income inequality, economic opportunity, education and healthcare for all, infrastructure, affordable housing and disaster preparedness, to name a few. We can be unabashed about the exceptionalism of America while acknowledging that we have problems. As we work together for an inclusive recovery that is long lasting, we must never forget that America's economic prosperity is a necessary foundation for our military capability, which keeps us free and strong and is essential to world peace. America is still the arsenal of democracy.

While I have a deep and abiding faith in the United States of America and its extraordinary resiliency and capabilities, we do not have a divine right to success. Our challenges are significant, and we should not assume they will take care of themselves. Let us all do what we can to strengthen our exceptional union.

IN CLOSING

I would like to express my deep gratitude and appreciation for the employees of JPMorgan Chase. From this letter, I hope shareholders and all readers gain an appreciation for the tremendous character and capabilities of our people and how they have helped communities around the world. They have faced these times of adversity with grace and fortitude. I hope you are as proud of them as I am. Finally, we sincerely hope that all the citizens of the global community will be able to move beyond this unprecedented pandemic and look forward to a brighter future.

Jamie Dimon
Chairman and Chief Executive Officer

April 7, 2021

Client Franchises Built Over the Long Term (page 6)

1 Digital includes outflows for ACH, BillPay, PayChase, QuickPay, Real-time Payments, external transfers and some wires.

2 2019 and 2020 Consumer Banking deposits include JPM Wealth Management

3 FDIC 2020 Summary of Deposits survey per S&P Global Market Intelligence. Limits all branches to $500 million deposits. Includes all commercial banks, savings banks and savings institutions as defined by the FDIC. 2006 excludes non-retail branch locations and all branches with over $500 million in deposits within the last two years (excluded branches are assumed to include a significant level of commercial deposits or are headquarter branches for direct banks).

4 Barlow Research Associates, Primary Bank Market Share Database, as of 4Q20. Rolling 8-quarter average of small businesses with revenue of more than $100,000 and less than $25 million.

5 Represents 2020 general purpose credit card spend, which excludes private label and Commercial Card. Based on company filings and JPMorgan Chase estimates.

6 Represents users of all web and/or mobile platforms who have logged in within the past 90 days.

7 Represents users of all mobile platforms who have logged in within the past 90 days.

8 Chase is tied with one other bank for first place, as per the Kantar 2020 Retail Banking Monitor (~3,000 surveys per quarter or ~12,000 per rolling 4 quarters). Data are based on Chase footprint, excluding recent expansion markets.

9 Based on 2020 sales volume and loans outstanding disclosures by peers (American Express Company (AXP), Bank of America Corporation, Capital One Financial Corporation, Citigroup Inc. and Discover Financial Services) and JPMorgan Chase estimates. Sales volume excludes private label and Commercial Card. AXP reflects the U.S. Consumer segment and JPMorgan Chase estimates for AXP's U.S. small business sales. Loans outstanding exclude private label, AXP Charge Card and Citi Retail Cards.

10 Inside Mortgage Finance and JPMorgan Chase internal data, as of 4Q20.

11 Experian AutoCount data for 4Q20. Reflects financing market share for new and used loan and lease units at franchised and independent dealers.

12 ~$83 billion represents the December 31, 2020 balances for accounts provided payment relief, including those currently enrolled in relief and those who have exited relief. Includes residential real estate loans held in Consumer & Community Banking, Asset & Wealth Management and Corporate.

13 Dealogic as of January 4, 2021.

14 Coalition Competitor Analytics, preliminary 2020 rank; market share analysis reflects JPMorgan Chase's share of the global industry revenue pool and is based on JPMorgan Chase's business structure. 2006 rank analysis is based on JPMorgan Chase analysis.

15 Client deposits and other third-party liabilities pertain to the Wholesale Payments and Securities Services businesses.

16 Based on Firmwide data. 2006 data not archived. 2019 restated based on 2020 methodology using Regulatory reporting guidelines.

17 Institutional Investor.

18 Based on third-party data.

19 Assets under custody based on Company filings.

20 Represents total JPMorgan Chase revenue from investment banking products sold to Commercial Banking clients.

21 S&P Global Market Intelligence as of December 31, 2020.

22 Commercial and industrial groupings for CB are generally based on client segments and do not align with regulatory definitions.

23 Refinitiv LPC, FY20.

24 Affordable housing consists of Community Reinvestment Act qualified, rent-restricted and naturally occurring affordable units; i.e., includes affordable housing units that are in low-to-moderate income neighborhoods.

25 Euromoney; 2020 results released February 2021.

26 Based on Company filings and JPMorgan Chase estimates. Rankings reflect publicly traded peer group as follows: Allianz Group, Bank of America Corporation, Bank of New York Mellon Corporation, BlackRock, Inc., Credit Suisse Group AG, DWS Group, Franklin Resources, Inc., The Goldman Sachs Group, Inc., Invesco Ltd., Morgan Stanley, State Street Corporation, T. Rowe Price Group, Inc. and UBS Group AG. JPMorgan Chase ranking reflects Asset & Wealth Management client assets, Chase Wealth Management investments and new-to-firm Chase Private Client deposits.

27 Ranking as of December 31, 2020. Source: Morningstar, as of February 28, 2021, including long-term open-end mutual funds and ETFs only, excluding feeder funds and fund of funds. China inbound funds AUM is aggregated based on equity, fixed income and allocation funds domiciled outside of China that invest primarily in Greater China as defined by J.P. Morgan Asset Management.

28 Reflects J.P. Morgan Asset Management global long-term active fund AUM market share as of December 31, 2020. Source: ISS Market Intelligence Simfund retrieved March 17, 2021. Excludes index, fund of funds and money market funds.

29 In the fourth quarter of 2020, the Firm realigned certain Wealth Management clients from Asset & Wealth Management to Consumer & Community Banking. Prior-period amounts have been revised to conform with the current presentation.

30 Effective in the first quarter of 2021, the Wealth Management business was renamed Global Private Bank.

31 Source: IXI, J.P. Morgan estimates

32 All quartile rankings, assigned peer categories and the asset values used to derive the 10-year J.P. Morgan Asset Management long-term mutual fund AUM are sourced from Lipper, Morningstar and Nomura based on country of domicile. Includes only Asset Management retail open-ended mutual funds that are ranked by the aforementioned sources. Excludes money market funds, Undiscovered Managers Fund and Brazil-domiciled funds. Quartile rankings are done on the net-of-fee absolute return of each fund. The data providers redenominate the asset values into U.S. dollars. This percentage of AUM is based on fund performance and associated peer rankings at the share class level for U.S.-domiciled funds and at the primary share class level or fund level for all other funds. Primary share class, as defined by Morningstar, denotes the share class recommended as being the best proxy for the portfolio and, in most cases, will be the most retail version (based upon annual management charge, minimum investment, currency and other factors). Where peer group rankings given for a fund are in more than one primary share class territory, both rankings are included to reflect local market competitiveness. Performance data could have been different if all funds/accounts had been included. Past performance is not indicative of future results. The classifications in terms of product suites and product engines shown are J.P. Morgan's own and are based on internal investment management structures.

33 Represents the Nomura star rating for Japan-domiciled funds and Morningstar for all other domiciled funds. Includes only Asset Management retail open-ended mutual funds that have a rating. Excludes money market funds, Undiscovered Managers Fund and Brazil-domiciled funds. Mutual fund rating services rank funds based on their risk-adjusted performance over various periods. A 5-star rating is the best rating and represents the top 10% of industry-wide ranked funds. A 4-star rating represents the next 22.5% of industry-wide ranked funds. A 3-star rating represents the next 35% of industry-wide ranked funds. A 2-star rating represents the next 22.5% of industry-wide ranked funds. A 1-star rating is the worst rating and represents the bottom 10% of industry-wide ranked funds. The overall Morningstar rating is derived from a weighted average of performance figures associated with a fund's three-, five- and 10-year (if applicable) Morningstar Rating metrics. For U.S.-domiciled funds, separate star ratings are given at the individual share class level. The Nomura star rating is based on three-year risk-adjusted performance only. Funds with fewer than three years of history are not rated and hence excluded from this analysis. All ratings and the assigned peer categories used to derive this analysis are sourced from these fund rating providers as mentioned. Past performance is not indicative of future results.

34 Represents AUM in a strategy with at least one listed female and/or diverse portfolio manager. "Diverse" defined as U.S. ethnic minority.

JPMorgan Chase Is in Line with Best-in-Class Peers in Both Efficiency and Returns (page 8)

1 Best-in-class peer overhead ratio represents the comparable business segments of JPMorgan Chase (JPM) peers: Capital One Consumer Banking & Domestic Card (COF–CB & DC), Citigroup Institutional Clients Group (C–ICG), US Bancorp Corporate and Commercial Banking (USB–C & CB), Credit Suisse Private Banking (CS–PB) and T. Rowe Price (TROW).

2 Best-in-class peer ROTCE represents implied net income minus preferred stock dividends of the comparable business segments of JPM peers when available, or of JPM peers on a firmwide basis when there is no comparable business segment: Bank of America Consumer Banking (BAC–CB), Morgan Stanley Institutional Securities (MS–IS), PNC Bank (PNC), UBS Global Wealth Management (UBS–GWM) and Morgan Stanley Investment Management (MS–IM).

3 Comparisons are at the applicable business segment level, when available; the allocation methodologies of peers may not be consistent with JPM's.

4 Citigroup Inc. (C), Bank of America Corporation (BAC), The Goldman Sachs Group, Inc. (GS), Morgan Stanley (MS), Wells Fargo & Company (WFC).

5 Managed overhead ratio = total noninterest expense/managed revenue; revenue for GS and MS is reflected on a reported basis.

Size of the Financial Sector / Industry (page 28)

1 Banks over $5B in assets as of 2020.

2 H.8 data.

3 US Banks over $50B in assets as of 2020.

4 Consists of cash assets and Treasury and agency securities.

5 Real Gross Domestic Product, Billions of Chained 2012 Dollars, Quarterly, Seasonally Adjusted Annual Rate.

6 Federal Reserve Financial Accounts Z.1 data composed of total financial assets of the following subcategories: mutual funds, ETFs, closed end funds, brokers and dealers and funding corporations.

7 Data from Preqin; Hedge Fund AUM is not included in 2000; 2020 figure is annualized based on available data through 3Q.

8 Represents market capitalization; Facebook not included in 2010.

9 Represents market capitalization; Private companies use the latest valuations.

Complexities of the Regulatory System (page 42)

1 The Council, through Office of Financial Research, may request reports from systemically important BHCs.

2 The FDIC may conduct exams of systemically important BHCs for purposes of implementing its authority for orderly liquidations but may not examine those in generally sound condition.

3 The Dodd-Frank Act expanded the FDIC's authority when liquidating a financial institution to include the bank holding company, not just entities that house FDIC-insured deposits.

Consumer & Community Banking

When we planned for 2020, we could not have imagined the circumstances that would unfold. It was a challenging year for the world, for the country and for JPMorgan Chase. We are fortunate to be a part of one of the world's greatest companies. Our Consumer & Community Banking (CCB) franchise is resilient, and 2020 demonstrated that. Throughout the COVID-19 crisis, we supported our consumer and small business customers – and our employees – with compassion and flexibility.

Our performance in 2020 reflected the state of the broader economy and of our customers. While our deposit businesses were impacted by low rates and our credit card business was affected by lower spending, our Home Lending, Auto and Wealth Management businesses performed well. Despite many challenges, our largest businesses still reached notable milestones. For the first time, we led the nation in retail deposit market share at 9.8%. We maintained primary bank relationships with more than 75% of our Consumer Banking checking households. In Business Banking, we held the highest market share among all banks. We maintained our position as the #1 U.S. credit card issuer based on sales volume and outstanding balances. Home Lending originations reached their highest level since 2013. In the fourth quarter, we were ranked the #1 bank in auto lending. During the year, we also realigned and rebranded our Wealth Management business unit, J.P. Morgan Wealth Management, to capture the opportunity to help more customers manage their investments. We accomplished these achievements while responding to a global pandemic and continuing to invest in our businesses.

While we are proud of our accomplishments, we take nothing for granted and are intensely focused on our increasing and formidable competition, both traditional and new. I often remind the team of this wisdom from the late Andy Grove, former Intel CEO: "Only the paranoid survive."

Big Tech and fintech companies are competing with all of our businesses: offering new credit cards and banking services, demystifying stock and retirement investing, simplifying financing options for large purchases and making it effortless to send money – to a friend down the street or a family member in another country. Other companies are catering to business owners, making it easier than ever to start a business, accept payments, invoice customers and borrow money. These competitors start with the customer's pain points, obsess over them and strive to deliver a superb customer experience.

There are many examples of how these competitors have reset customer expectations with simple and easy digital experiences. As they build customer relationships, they also test, learn and develop new capabilities that customers want, try and adopt quickly. These companies release new features with urgency and grow their customer bases with speed. We are in a race to match their expertise in simplicity and ease of use before they can match our distribution and scale.

#1

#1 in total U.S. credit card sales volume and outstandings

#1

#1 in U.S. retail deposit share

63+M

More than 63 million U.S. households served

#1

#1 most-visited banking portal in the U.S.

#1

#1 primary bank within our footprint[1]

$1.1T

More than $1 trillion in credit and debit card sales volume

2020 financial results

Consumer & Community Banking delivered a 15% return on equity on net income of $8.2 billion. Our $51.3 billion in revenue was down 7% year-over-year, while our overhead ratio increased to 55% as we continued to invest heavily for future growth. Our customer base was relatively stable with over 63 million

1 Chase is tied with one other bank for first place, as per the Kantar 2020 Retail Banking Monitor (~3,000 surveys per quarter or ~12,000 per rolling four quarters). Data are based on Chase footprint, excluding recent expansion markets.

NEW TOOLS FOR CUSTOMERS

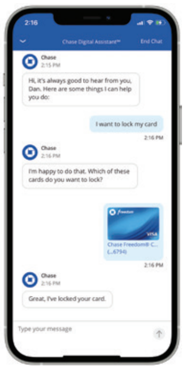
In 2020, customers engaged even more with our digital tools. We accelerated the rollout of some features and added functionality to help customers navigate the impacts of the pandemic. With Chase Digital Assistant℠, we added the ability to inquire about stimulus payments, change travel plans booked with rewards and dispute transactions. We also made it easier for customers to schedule an in-person meeting or a phone call with a banker or advisor from their local branch.

Additionally, we remained committed to offering new tools that support our customers' financial education and well-being. To help parents teach their kids good money habits, we launched Chase First Banking℠ – an account that puts parents in control but gives their children the freedom to learn how to earn, spend and save through the Chase Mobile® app. We also launched new goals-based savings and budgeting tools. New features in the Chase Mobile app give customers a more personalized look at their finances. Snapshot℠, for example, provides easy-to-digest daily insights into customers' everyday spending, saving, earning and more.

We continue to innovate and invest in our digital capabilities to complement our strong branch network, enabling our customers to bank how and where they want.

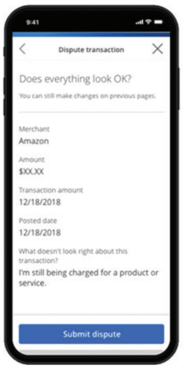
Chase Digital Assistant

Through a text-based conversation, customers can use the assistant to complete tasks in their account, such as replacing or locking their card, viewing account balances or getting help with an investment rollover.



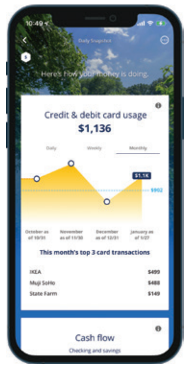
Transaction disputes

Customers can now report a problem with a debit or credit card transaction via the Chase Mobile app and chase.com.



Snapshot

Customers received more than 7 billion personalized insights.



U.S. households, including 4.3 million small business relationships.

Our average deposits of $851 billion were up 22% over 2019, and client investment assets reached $590 billion, up 18%. We ended 2020 with $448 billion in average loans, down 6%, reflecting the decline in credit card spend and loan balances during the year. Our customer base of active mobile users is the largest and the fastest growing among U.S. banks: 40.9 million, up 10% year-over-year.

We built our credit reserves by $7.8 billion in response to the pandemic's economic impacts. Losses did not materialize at the pace we expected in the early stages of the crisis; critical federal government support to consumers and small businesses provided a bridge to our customers; and, as a result, credit performance was better than we anticipated.

As in years past, our performance in 2020 resulted from our continued focus on four key areas: customers, profitability, people and controls. Below are some of the noteworthy accomplishments in each of these areas.

Customers

We supported our growing base of consumer and small business customers throughout the year in multiple ways: 1) direct relief, including payment deferrals and fee waivers, 2) facilitation of federal government relief and 3) commitments to advance racial equity in the U.S.

The firm provided customer assistance to approximately 2 million accounts with balances totaling roughly $83 billion. We facilitated federal stimulus payments to tens of millions of our customers. Through the Small Business Administration's (SBA) Paycheck Protection Program (PPP), we delivered firmwide $32 billion in loans to small businesses ($28 billion excluding SBA safe harbor refunds), more than any other lender on a dollar basis. No less than 75% of our branches continued operating throughout the pandemic. We also committed $30 billion across the firm to advance racial equity over the next five years, promoting and expanding affordable housing and financial health, among other initia-

60+%

Digital share of consumer Home Lending Applications (Q4)

55+M

More than 55 million active digital customers

40+M

More than 40 million active mobile customers

Chase Business Complete Banking℠ with QuickAccept℠ account launched

↑ ~10 PERCENTAGE POINTS

Increase in share of checks deposited through QuickDeposit℠ (Q4)

158 NEW BRANCHES

158 new branches, including 87 in new markets, in 2020

tives. As an example, we will provide $12 billion in home loans for Black and Latinx households.

Customers continue to choose Chase – and stay with us – because of our best-in-class products and the value they offer. Still, we have an opportunity to improve the customer experience, particularly for those who use more than one of our products. Navigating across our products and channels can be disjointed. While we remove friction wherever we detect it, we must step up our progress toward simplifying the experience for our customers.

Profitability

We entered this challenging year in a position of strength and were able to adapt quickly, adjusting risk decisions throughout. While the events of 2020 interrupted the recent downward trend in our overhead ratio, they did not disrupt our focus on becoming more efficient and serving our growing customer base more profitably. We invest in our businesses to drive long-term, profitable growth – and one of the ways we have done that, over time, is by investing in efficiency.

Our digital and mobile capabilities are a great example. Digital adoption, including mobile, increased at an accelerated rate due to the pandemic. Overall, 69% of our customers are digitally engaged. Among Business Banking customers, that figure is 86%. During the pandemic, we encouraged – and drove – self-service to reduce the need to visit a branch or speak with us by phone.

We created new ways for customers to self-serve, including digital and interactive voice response tools, which we launched within days so customers could request help quickly. These tools also enabled us to serve a greater volume of customers and proved to be critical when so many of them needed us urgently and all at the same time. We also built a digital intake process and application for PPP loans in a matter of days and revised those applications as new SBA guidance or requirements evolved.

In addition to tools created to facilitate much-needed pandemic relief, we continued to release and refine digital features and capabilities so they could be used more widely by our customers. Our digital account opening product processed nearly 80% of all new accounts last April. We processed more than 40% of all checks through QuickDeposit℠ in the last quarter of 2020, up nearly 10 percentage points year-over-year. More than 60% of consumer home loan applications were opened digitally in the fourth quarter, a rate six times higher than the prior year. In addition, customers were able to dispute credit and debit card charges digitally. We also developed convenient, less intrusive and more effective ways to communicate with – and collect payments from – customers who fall behind. By updating our communication strategy and tactics, we reduced the time required to set up a payment plan and, as a result, doubled the share of digital payment plans year-over-year.

We continue to seek out opportunities to invest in future growth. In 2020, we saw such an opportunity and acquired cxLoyalty, a leading U.S. travel and loyalty business. We are optimistic that consumer travel will rebound after the pandemic. This transaction allowed us to upgrade our travel-focused credit card products so we can own the end-to-end travel experience. This offering also allowed us to address a pain point for our customers: Millions of travel plans were disrupted simultaneously at the start of the pandemic, and customers needed our help making adjustments.

While these investments drive returns, they also serve to position Chase as the financial partner of choice for all our customers. We want to build deeper, lifelong customer relationships that allow us to do more for them. When we already know a customer, we can make it easier to do more with us. For example, we can often pre-approve existing customers for credit and provide certainty of ultimate approval. We can verify income when deposit customers apply for a loan, prefill the information we have on file and so on. These stronger relationships also last longer and, as a result, are more profitable. As an example, deposit customers who also have a Chase credit card are almost 60% less likely to leave us than those without a card relationship.

People

Our team of more than 122,000 continued to shine during this challenging year. I have such deep appreciation for everything they have done and continue to do for our customers, clients and communities each day. This is especially true for those on the front lines in our branches interacting with our customers face to face. Those who could work from home pivoted quickly to do so, and, after an adjustment period, most performed their job remotely as well as they had on-site before the crisis. Those who could not do their job remotely continued to serve our customers from our offices and branches, executing critical processes that kept our business running – generating cards for customers, printing statements, moving currency and much more.

We took additional steps to make sure our employees could work safely and to give them peace of mind during an uncertain time. All employees received extra days off to deal with impacts of the crisis. We distributed special payments to employees serving customers in branches and call centers, recognizing their exceptional contributions. Employees who worked in locations that were temporarily closed or had reduced operating schedules continued to be paid for full-time work. We offered alternative positions to those who were unable or unwilling to return to their pre-pandemic role. We also provided extra benefits for employees with children to help with childcare and education.

We have a sustained commitment to diversity and inclusion on our team. In 2020, we made progress toward establishing new representation goals. Our actions took on even greater meaning and importance amid our country's social unrest in response to profound racial inequalities.

Controls

Our customers rely on us to protect them, especially during a crisis. That responsibility guides all our work. We use many systems, processes and procedures to ensure we execute within all the laws and requirements that govern us. Crisis situations demand even more focus and attention so we can respond quickly but in a well-controlled manner. Where we miss the mark, we work tirelessly to address it so that we resolve issues and ensure they don't reoccur. We evaluate and upgrade these safeguards as an ongoing, evergreen practice.

Our resiliency planning is a key discipline we leaned on heavily throughout the year. Although we test and revise our resiliency planning annually, 2020 proved to be its greatest test yet. While we learned our limitations, we also discovered that we had underestimated what was possible out of our remote work capabilities. Providing work-from-home capabilities to customer service specialists – sending work-from-home technology kits to employees across the globe – is one such example.

Conclusion

We always aspire to be better, faster and more efficient. Customers expect it, competition is fierce and we take nothing for granted. We strive every day to improve and make it both simple and easy for customers to manage their finances with us. Despite the challenges of 2020 – some of which we still are facing – I remain hopeful and optimistic about our future. We demonstrated what we are capable of doing under the most trying of circumstances, and what we learned will continue to inspire us to achieve even more.

Gordon Smith
Co-President and Chief Operating Officer,
JPMorgan Chase & Co., and
CEO, Consumer & Community Banking

Corporate & Investment Bank

In the dozen years since the global financial crisis, the banking system has been rigorously stress tested to ensure it can withstand severe market shocks. In 2020, the COVID-19 pandemic offered a stress test beyond any that our industry has experienced to date.

The demand for our balance sheet – in terms of capital and liquidity – was unprecedented last year. In the months of March and April alone, we helped clients raise more than $940 billion in the capital markets and extended more than $80 billion in credit, giving companies and governments the lifelines they needed.

As the pandemic took hold, markets saw the most rapid sell-off in history. Amid spiking volatility, our Equities business witnessed many days of record volumes, while at the height of the crisis, our Wholesale Payments team processed up to $11 trillion in payments in a single day.

Our firm's strategy – to be global, complete and at scale – has cemented its reputation as a port in the storm, able to shore up crisis-hit firms and national economies while continuing to grow even as margins tighten and capital buffers increase. That strategy has also provided the springboard for our growth into new markets and geographies and has enabled our heavy investment in technology. In 2020, that investment meant that we could not only move forward with advancements in artificial intelligence, cloud and blockchain but also ensure that more than 90% of our employees could work securely from home in a matter of days.

An exceptional performance

The Corporate & Investment Bank (CIB) achieved a 20% return on equity in 2020 by generating earnings of $17.1 billion on revenue of $49.3 billion – a historic performance in a tumultuous, impossible-to-predict year. Discounting that exceptional performance, over the last five years our return on equity has stood consistently between 14% and 16% on an adjusted basis[1]. In fact, during that time, we have increased revenue by 16% and net income by 32%.

Our Investment Banking business ended the year with 9.2% of global market share, its highest since 2009, and generated record fees of $9.5 billion to maintain our #1 ranking.

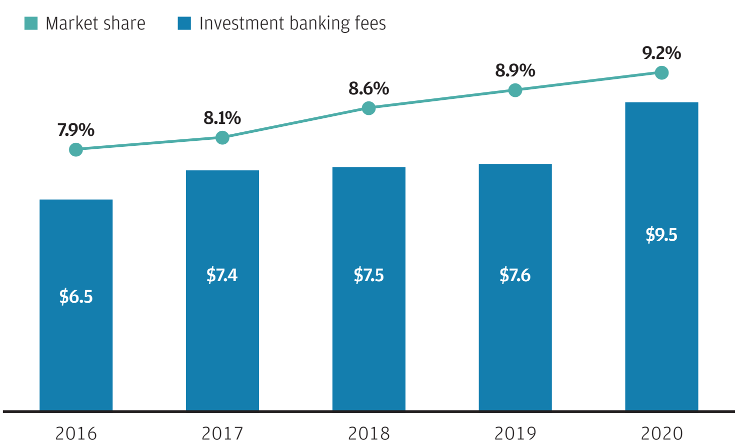
As COVID-19 spread across the globe, we helped clients bolster their balance sheets, including those in hard-hit sectors like retail, travel and hospitality. As a result, underwriting fees in our Debt Capital Markets business hit an all-time record. The business, which has ranked #1 for the last five years, extended its leadership position with nearly 10% of market share.

Stimulated by unprecedented central bank support, the reversal in market sentiment and the activity that followed in the second half of the year were extraordinary. In 2020, our Equity Capital Markets team helped clients raise $389 billion of capital in 563 deals around the world, which represented one-third of the total market.

One major development in 2020 was the evolution of the initial public offering (IPO) market as special purpose acquisition companies (SPAC) became mainstream, a byproduct of low interest rates and excess capital stockpiled by investors. These "blank check" companies, which are formed for the sole purpose of acquiring a private company, accounted for more than half of all IPOs in 2020. We have led our share of SPACs, but as with any growing trend, we want to remain diligent and seek to do the right deals with credible sponsors.

INVESTMENT BANKING FEES AND MARKET SHARE HAVE RISEN STEADILY

($ in billions)



Source: J.P. Morgan; Dealogic

1 As reported for 2020 Investor Day.

In our M&A business, announced volumes returned to pre-pandemic levels later in the year as government stimulus packages took effect and companies shifted their stance from defensive to more opportunistic. Our M&A ranking in EMEA rose to the #1 position, and we retained the #2 spot in North America.

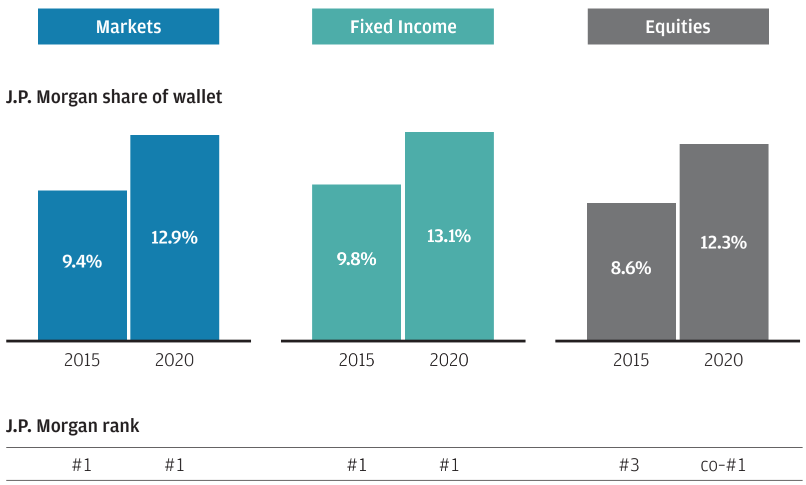
The pandemic, the U.S. presidential election and Brexit all spurred trading activity. With so much to navigate, investors turned to J.P. Morgan as a reliable provider of liquidity, which resulted in record volumes across many of our trading areas. At peak moments, our foreign exchange (FX) desk was executing 730 trades per second, underlining years of investment in technology and highlighting just how critical we are to well-functioning markets during times of volatility. Overall, Markets revenue climbed 41% to a record $29.5 billion, with our Fixed Income Markets business generating $20.9 billion and Equity Markets producing $8.6 billion.

Our Securities Services business, which provides pre- and post-trade services to asset manager clients, had a strong year of growth in 2020. Clients outsourced more of their middle and back office functions to J.P. Morgan as scalable infrastructure and timely insights became critical to handling massive spikes in volume and volatility. The team onboarded $4 trillion in assets under administration[2], further strengthening our position as a leader in fund accounting and administration, and ended the year with record assets under custody[3] of $31 trillion. We launched our next-generation Middle Office offering, leveraging the capabilities

2 Assets under administration: Represents the market value of client assets for which administrative and other related services are performed.

3 Assets under custody: Represents assets held directly or indirectly on behalf of clients under safekeeping, custody and servicing arrangements.

CONSISTENT INVESTMENT HAS LED TO SHARE GAINS IN MARKETS



Source: Coalition Competitor Analytics. Rankings and share based on J.P. Morgan's internal business structure

of the CIB to offer market-leading solutions to our clients at a time of industry consolidation and growth in complex assets.

Our Wholesale Payments unit, which includes Treasury Services, Trade Finance and Merchant Services, also experienced strong growth in 2020. A decline in revenue, mostly attributable to low rates, was offset by notable deposit growth. Throughout the pandemic, Treasury Services has processed payments and facilitated the flow of essential funds to companies and governments. As the world's largest transaction bank, the business moves trillions of dollars every day and remains #1 in U.S. dollar clearing by volume. Innovation in payments is exploding, driven by the growth in e-commerce and digital wallets. In 2020, we went live with Concourse™, a highly configurable global platform that allows clients to send and receive payments in a more seamless way; J.P. Morgan also announced fintech partnerships in areas such as supply chain finance and corporate credit cards.

Legacy of a pandemic

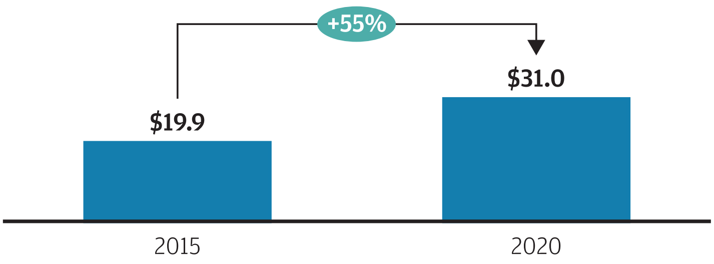
The pandemic has accelerated the shift to digital platforms and has transformed the way we and our clients work. Last year showed us how quickly we can adapt; for the first time, many of the year's biggest banking deals were conducted virtually or by phone – unthinkable before 2020.

As the crisis recedes, it is likely that we will adopt the best of these new virtual environments to complement what we miss most about working together in person. We are, at heart, a collaborative business – and working together is critical to innovation, creativity and a stronger culture.

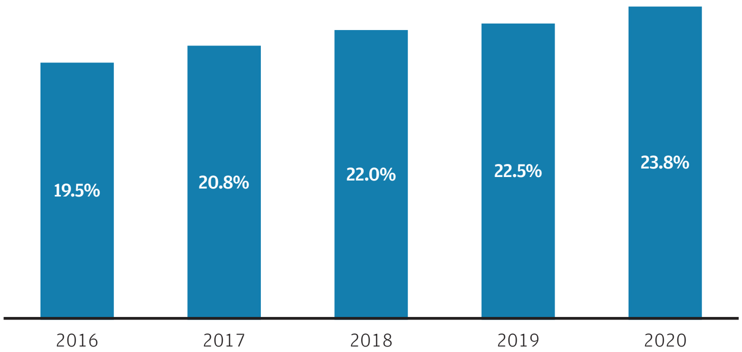
After the pandemic, we will likely see some shift in working patterns. While some job functions will need to remain on-site full time, a different working model is starting to emerge in which employees rotate between working at home and in the office. This creates more flexibility for employees and also enables us to

ASSETS UNDER CUSTODY HAVE CONTINUED TO GROW IN SECURITIES SERVICES

($ in trillions)



INNOVATION AND SCALE HAVE CONTRIBUTED TO GROWING SHARE IN PAYMENTS



Source: J.P. Morgan's SWIFT market share for U.S. dollar wire payments

shrink our real estate footprint, operate buildings more efficiently with fewer empty seats and eliminate the need for costly recovery sites.

Meeting the needs of the future

From established rivals to tech giants and fast-moving fintechs adept at delivering a great client experience, competitors are crowding up across all fronts. The CIB is not immune to these competitive threats, which is why our focus on innovation and technology is at the heart of our investments.

Clients want to access the full breadth of our franchise from anywhere and at any time, and we are transforming to meet that future.

This transformation presents different opportunities across our businesses. For example, in Securities Services, we are evolving from a provider of back office services to a fully integrated platform that delivers scale and efficiency for clients across the entire investment life cycle.

In the U.S., the number of publicly listed companies has fallen by 24% since the mid-1990s as start-ups delay IPOs. To help those private companies through their extended life cycles, we are working to provide a platform that offers everything from primary issuance to secondary trading, as well as data and equity administration capabilities. In partnering with Commercial Banking, which serves thousands of smaller, privately held companies, we see a wealth of untapped opportunities.

The trend in electronification continues in market trading, and we are expanding connectivity options for our clients, improving efficiency through automation and digitization, and more effectively participating in multi-dealer platforms. There is also an opportunity to act as the trading interface for smaller banks and to partner with Commercial Banking and Treasury Services to manage the FX needs of smaller companies operating in international markets. Our ambition is to create a single payment and hedging platform for corporations that enables them to more efficiently reduce currency exposure and manage cross-border payments.

And in Wholesale Payments, where we now have the world's most complete payments network, our focus is on global e-commerce and online marketplaces. We want to help clients plug into a comprehensive payments and account administration service in one place and support more small businesses looking for FX expertise and working capital.

Central to all this change is a multiyear program to modernize our technology infrastructure. We are becoming a digital-first organization, able to harness – safely and smartly – the power of data and artificial intelligence across our firm in order to provide a more seamless client experience.

A sustainable future ...

Climate change is a defining issue of our age. Given our firm's scale and financing capabilities, we can play a leading role in helping companies and economies transition to a low-carbon world. As part of our efforts to limit global temperature rise by 2050, we are aligning our financing portfolio with the Paris Agreement. We will also establish intermediate emission targets for 2030, with a focus on the oil and gas, electric power and automotive manufacturing sectors.

In 2020, we achieved our goal of becoming carbon neutral in our operations, which includes sourcing renewable energy for 100% of our global power needs. The firm also launched the Center for Carbon Transition to provide clients with centralized access to sustainability-focused financing, research and advice.

Business and government must join forces to address the challenge of climate change. Meeting the target of the Paris Agreement requires massive restructuring in how the world produces and consumes energy. We are helping clients make the transition by financing technology to reduce emissions and by supporting investment in green energy. In industrialized sectors, we will continue to advocate for market-based policy solutions, including a price on carbon.

... and a diverse future

Stubborn structural challenges persist across our society, and in every industry human potential continues to go untapped as racial prejudice goes unchallenged.

The killing of George Floyd in May 2020 and the subsequent protests across the U.S. and around the world impelled us to seek new solutions to address the challenges Black and minority individuals face in the workplace – and in society.

Our efforts to close the racial wealth divide include a $30 billion injection of additional capital and other resources for Black and Latinx clients, employees and communities in the U.S. and globally over the next five years. As part of our investments, we will work to boost the flow of capital to minority-owned banks and businesses, expand support for minority-owned enterprises, improve financial health and broaden the diversity of our suppliers. Programs such as the Entrepreneurs of Color Fund and Advancing Black Pathways, for example, provide Black and other minority groups with access to capital, education and our technical expertise.

Our own success depends on hiring the best people, no matter where they grew up, how they were educated or what they look like. Internally, we have focused on inclusive recruiting, invested in new programs to advance Black talent and created a team dedicated to discovering recruits from more diverse communities.

Conclusion

In a year like no other, we did what we have always done: We supported our clients and employees through tough times.

The strategy we set years ago remains as relevant as ever. We are focused on running our business efficiently, managing risk prudently and delivering for clients. We are optimizing our business and closing any addressable gaps in our offering, and we are continuing to transform our business for the future.

From the pandemic crisis, we take forward some vivid lessons; namely, to preserve our ability to innovate and execute at speed, even as a large and complex organization. And we must do that in a way that enables our people, communities and planet to thrive over the long term.

The global vaccine rollout provides hope for our collective long-term health and economic well-being. As we emerge from this tumultuous time, one of the lingering concerns is whether the extreme infusion of liquidity and fiscal stimulus might ultimately create inflationary conditions in the medium term.

The performance of the CIB in 2020 is testament to the extraordinary commitment of our employees who supported clients while facing their own personal challenges. I am very proud of what they have accomplished.

Daniel E. Pinto
Co-President and Chief Operating Officer,
JPMorgan Chase & Co., and
CEO, Corporate & Investment Bank

Commercial Banking

I want to begin this letter with a heartfelt thank you to all of my colleagues in Commercial Banking (CB). Without a doubt, 2020 presented tremendous challenges, which our team met directly with unwavering commitment and dedication. Amid enormous uncertainty and adapting to a new work environment, we remained relentlessly focused on supporting our clients, our communities and each other.

Looking back, we faced this past year from a position of strength, having maintained our credit discipline, prepared extensively for a potential downturn, and made significant investments in our platforms and technology. It was this consistent execution of our long-term strategy that led to CB's strong performance last year.

There's so much to highlight about our business and our team – this letter will give you but a small glimpse.

Standing with our clients

We take great pride in standing with our clients during challenging times. The breadth and magnitude of financial stresses across the globe in 2020 were astounding – operations were halted, supply chains were disrupted and revenue across many industries fell dramatically. Through all of this, our CB team supported our clients and helped them access vital liquidity as they adapted to the pandemic and faced tremendous uncertainty.

For example, we extended $13 billion in new credit[1] to many healthcare clients, including New York-Presbyterian Health System – which experienced a significant increase in overnight patients as a result of COVID-19. We moved quickly to provide necessary liquidity, enabling them to acquire additional medical supplies and equipment, expand their staff, and serve the community in a time of crisis.

Moreover, our team worked tirelessly to facilitate the distribution of federal government emergency funding through various stimulus programs. In March of 2020, we rapidly built the processes, platforms and technology needed to deliver critical financing to our clients, partnering across the firm to help protect millions of jobs. This important work has continued into 2021.

Supporting our communities

The pandemic has had a profound impact on our communities and has magnified the challenges they face, especially in underserved segments of society. In 2020, we extended $21 billion in financing to states and municipalities, educational institutions and healthcare providers. Given the importance of these vital institutions, particularly during times of crisis, we are proud to support them in their delivery of essential services to our communities.

In addition, our Commercial Real Estate businesses continued to provide much-needed resources to help expand and preserve access to affordable housing. As part of the firm's Path Forward commitment to advance racial equity, we have committed to finance an additional 100,000 affordable rental units over the next five years to further address this systemic challenge. Through this commitment, we will provide $14 billion in new loans, equity investments and other support to increase and sustain affordable housing in underserved communities.

EXTENDING CREDIT TO SUPPORT OUR COMMUNITIES[1]

$13B	$4B	$4B	$3B
TO HOSPITALS AND HEALTHCARE SERVICES	TO EDUCATIONAL INSTITUTIONS	TO STATE AND LOCAL GOVERNMENTS	TO AFFORDABLE HOUSING

1 Includes new credit commitment originations and existing credit commitments that experienced a major modification during 2020.

FINANCING AFFORDABLE HOUSING

Mercy Housing is a nonprofit that helps people access safe, stable and quality affordable housing. In 2020, we provided the construction financing and equity for two major Mercy projects in California: 1064 Mission Street, co-developed with Episcopal Community Services, in San Francisco and Capitol Park Hotel in Sacramento. These projects will create nearly 400 affordable housing units and house vital services for people experiencing homelessness.


1064 Mission Street


Capitol Park Hotel

Investing in our long-term strategy

In CB, we are executing a long-term, disciplined strategy, focused on adding great clients and delivering valuable solutions to help them succeed. Throughout 2020, we remained focused on our strategic priorities and continued to invest and innovate across our business.

Investing to serve more clients

Being able to deliver our broad-based capabilities at a very local level distinguishes us from our competitors. As such, we now have teams in 137 U.S. locations. Through data-driven analysis, we've identified over 50,000 prospective clients across our Commercial & Industrial businesses[2] and have expanded local coverage accordingly. Since 2008, we've essentially doubled our footprint across the U.S., as we moved into 47 new, high-potential markets, and we're excited to deepen our presence in these markets in the years to come.

We also have an incredible opportunity to serve non-U.S.-headquartered, multinational companies overseas. Since launching our international expansion initiative in 2018, we've added bankers to cover high-quality companies across 17 countries. While we're just getting started, we're very excited about the client response and activity we have seen so far. Similar to our domestic strategy, we are taking a long-term view and focused on covering only the best clients.

Market expansion is only one part of CB's growth strategy – deepening relationships with clients is equally important. We know our clients have unique needs and value industry-specific insights and solutions. To better serve them, we've added a number of new industries to our coverage model over the last several years and now have specialized teams aligned to 17 industry sectors. We expect these dedicated efforts to drive meaningful future growth in our business.

Investing in innovation

We are innovating and building for the future while at the same time managing a franchise at scale. As we look forward, we continue to take a design-driven approach to assess our clients' evolving needs and expectations, directing our investments in data capabilities, technology, platforms and solutions to help further differentiate our value proposition and how we do business.

With many working remotely, our clients faced complex challenges in 2020. Through our digital banking platforms and payment solutions, we provided ready access to the tools clients needed to continue to run their businesses. Digital adoption accelerated last year, and we added more than 1,800 new relationships – many onboarded completely virtually. We are continuing to invest substantially across all of our platforms to more seamlessly integrate them with those of our clients and deliver a superior experience.

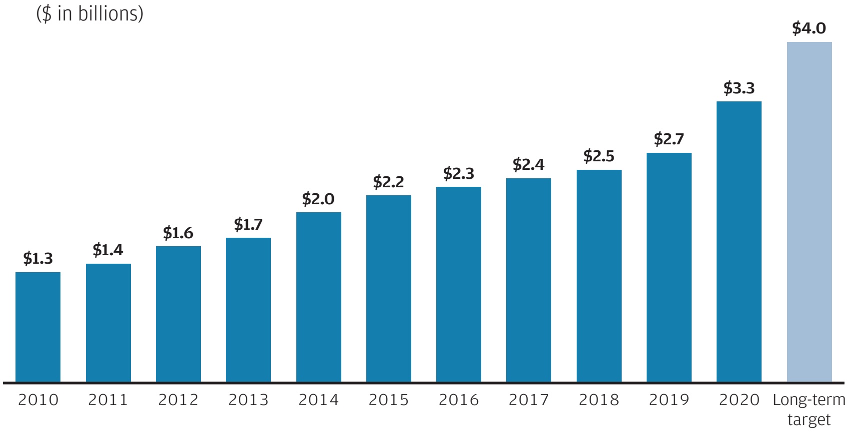
Investing in our team

Our outstanding team and culture of excellence are the foundation of our success in CB – this was especially true last year. By the end of March, 98% of our team was working remotely – and a small group of truly heroic colleagues continued to carry out essential operations on-site. The leadership, creativity and partnership demonstrated across our business were inspiring and reinforced the importance of our people.

2 Commercial & Industrial businesses are generally based on client segments and do not align with regulatory definitions.

DELIVERING THE BEST INVESTMENT BANK TO CB CLIENTS

Commercial Banking Gross Investment Banking Revenue[3]
($ in billions)



3 Represents total JPMorgan Chase revenue from investment banking products provided to CB clients.

As always, we remain focused on hiring, training and enabling the best team to execute our strategy. Our technology investments are connecting us in meaningful new ways, reinforcing our values of teamwork and collaboration. As we seek to foster even more innovation across our business, we're adding expertise and training in design, data and technology. We're empowering our people with tools and analytics that allow them to more effectively and efficiently serve our clients.

Fostering an inclusive workplace took on new meaning last year, and we are committed to building an organization representative of the communities we serve. Despite the recruiting challenges posed by COVID-19, we increased diverse representation across all demographics and welcomed our most diverse full-time analyst class in recent years.

Solid financial performance

We don't measure our success on an annual basis; rather, we take a long-term view and invest through the cycle. The investments we've made in our people and capabilities, combined with our patience and discipline, continue to drive strong results across our business. In 2020, CB delivered net income of $2.6 billion on $9.3 billion in revenue, generating a return-on-equity of 11%. We are proud of our performance despite market volatility, lower interest rates and a significant build in our credit reserves.

Our underwriting discipline and client selection helped drive our solid credit performance last year, with net charge-offs of 18 basis points, primarily concentrated in certain industries. While our actual credit losses were modest, CB added $1.7 billion in credit reserves for the year as we prepared for a variety of economic outcomes.

Being able to deliver the full power of JPMorgan Chase to our clients remains a key value driver. Perhaps the best example is our close partnership with the Corporate & Investment Bank, which resulted in record gross Investment Banking (IB) revenue of $3.3 billion, up 22% year-over-year and surpassing our $3 billion long-term target. We see tremendous opportunity in the years to come and have increased our long-term IB revenue target to $4 billion.

While no one could have predicted the events of 2020, our results confirm our strategy and highlight the resilience of our business.

Looking forward

I am more optimistic than ever about the future for CB. We have exceptional talent, outstanding capabilities and enormous potential. We have an incredible opportunity to continue to grow our franchise, and we are not standing still – we are innovating and investing across our business for the long term.

Looking forward, we do not intend to simply go back to normal. Last year's challenges made us stronger, giving us an opportunity to learn and grow as a business – finding new ways to serve our clients and strengthen the places we call home. We will capture the many lessons learned in 2020 to help accelerate the execution of our strategy and position CB for even greater success in the future.

I'll close this letter the same way I began, by acknowledging our exceptional team and thanking them for their unbelievable support of our clients and each other.

Douglas B. Petno
CEO, Commercial Banking

Asset & Wealth Management

When last year's shareholder letter was published, the world and financial markets were just coming to grips with COVID-19. Since then, the global pandemic has affected all of us in unforgiving ways – with loss of life, strained healthcare systems and economic setbacks that will be felt for years to come.

Fortunately, governments and central banks acted swiftly and decisively to infuse capital and provide support for what could have been very fragile markets. If there is a silver lining to this horrible pandemic, it is how much the world acted in unison to try to do the right thing. We are hopeful that 2021 will be a better year for all.

Rising to meet an unprecedented challenge

In March 2020, over the course of two weeks, we transitioned more than 90% of our global Asset & Wealth Management (AWM) team from on-site to remote work settings. In doing so, we proved that we can serve our clients under any and all circumstances, even without ever leaving our homes. We also showed that we can make sound and fast decisions under intense pressure and uncertainty.

As always, clients were our focus. Helping them as we all went through these challenges, together, was a source of great pride and drove us to be at our best.

Across AWM, our years of resiliency testing and preparation enabled us to pivot swiftly and seamlessly. As CEO, I have written annually about how proud I am of my colleagues and our firm. This was especially true in 2020, when we intensified our work on:

- **Digital acceleration.** Operating almost exclusively in a digital world, we were able to quickly identify manual or inefficient processes. As volumes surged and we overcame various work environment and personal challenges, we worked tirelessly to accelerate our digital engagement with clients, counterparties and one another. In 2021, we are focused on closing remaining process gaps and pulling forward multi-year plans.
- **Connectivity with our clients.** As the world locked down, we were given the gift of redirecting time previously devoted to travel and other in-person activities to connect with tens of thousands of clients eager for our insights and thought leadership. The success of this shift is demonstrated by our results: record attraction and retention of assets and clients.
- **Operational excellence.** With an agile mindset, we accelerated the movement of reports to dashboards, simplified processes and strengthened the governance of our technology investments.

Strong investment performance for clients

Year in and year out, we are focused on delivering outstanding investment performance. This is why maintaining a 95+% retention rate of our top-performing investment team heads, portfolio managers and research analysts is such a high priority. With the volatility that occurred in 2020, active management was never more important and its value never more apparent, and, accordingly, our long-term investment performance was strong across asset classes.

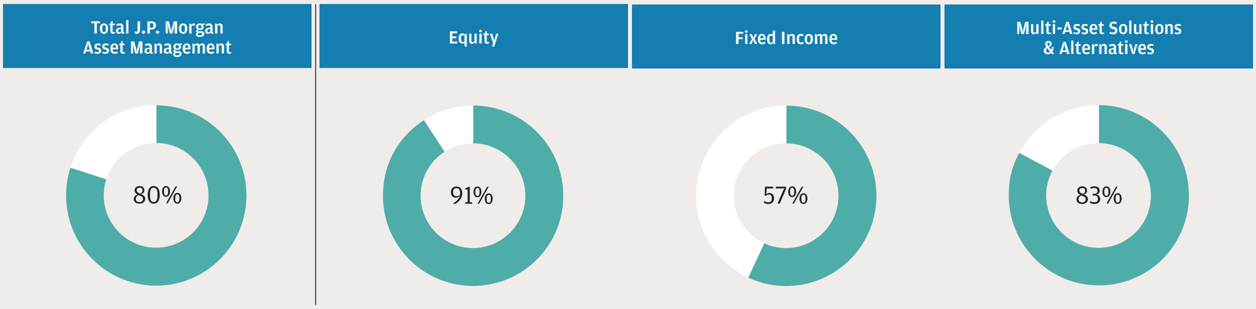
Clients vote with their feet, and they continue to entrust us with more of their assets every year. In 2020, our client assets grew to a record $3.7 trillion, and we received a record $276 billion in net client asset flows. Our record flows were the result of a diversified business that meets all of our clients' needs – we had positive flows across all regions, segments and products. Having our breadth and depth of solutions was especially important during a very volatile market environment.

AWM COVID-19 RESILIENCY HIGHLIGHTS

360M MINUTES	670,000	>3X	135,000	>$60M
TIME SPENT ON ZOOM BY AWM EMPLOYEES	EXTERNAL ATTENDEES JOINING DIGITAL EVENTS	YoY INCREASE IN EQUITY TRADING VOLUMES FOR WM CLIENTS	DIGITAL PORTFOLIO INSIGHTS ANALYSES COMPLETED	FRAUDULENT TRANSACTIONS PREVENTED

YoY = Year-over-year WM = Wealth Management

2020 % of J.P. Morgan Asset Management Long-Term Mutual Fund AUM Outperforming Peer Median[1] over 10 Years
(net of fees)



AUM = Assets under management

2020 — A Record Year for J.P. Morgan Asset & Wealth Management[2]

	Revenue	Pretax Income	Net Income	Loans (EOP)	Deposits (EOP)	Assets	Flows
2020 performance	$14.2B	$4.0B	$3.0B	$187B	$199B	$3.7T	$276B
Record	✓	✓	✓	✓	✓	✓	✓

EOP = End of period

- **Liquidity:** $104 billion in flows, as more risk-averse clients looked to reduce their market exposure, particularly during the first half of the year when flows reached $170 billion. Two of our money market funds, U.S. Government and U.S. Treasury, each attracted over $25 billion in flows last year[3].
- **Fixed Income:** $48 billion in flows, as market volatility and the low interest rate environment caused clients to seek high-quality income sources. We had strong flows into our Income funds ($8 billion)[4], High Yield Bond funds ($6 billion)[5] and Ultra-Short Income ETF (JPST) ($5 billion)[6].
- **Equity:** $33 billion in flows, as markets rebounded and clients increased their exposure, particularly during the second half of the year. There was strong activity across our offering, including significant flows into our Emerging Markets Equity funds ($6 billion)[7], U.S. Large Cap Growth funds ($4 billion)[8] and China A-Share funds ($3 billion)[9].
- **Multi-Asset:** $5 billion in flows, as clients continued to seek actively managed, outcome-oriented strategies. Our SmartRetirement Blend Target Date funds were an example of this, with $4 billion in flows[3].
- **Alternatives:** $6 billion in flows across a range of income-oriented and higher-returning strategies, including Infrastructure, Private Credit and our Highbridge offering.
- **Custody/Brokerage/Administration/Deposits:** $80 billion in flows, as clients trusted us to support their trading and banking needs.

Having dedicated market experts to support our clients is almost as important as the breadth and depth of our offering. In addition to the nearly 2,500 Global Private Bank[10] client advisors and more than 1,000 Asset Management investment professionals, we have over 120 market strategists, portfolio analysts and goals-based advisors whose *sole job* is to provide timely advice and insights to our clients.

1 For footnote, refer to page 67 footnote 32 in this Annual Report.
2 For footnote, refer to page 67 footnote 29 in this Annual Report.
3 Source: ISS Market Intelligence Simfund
4 Source: ISS Market Intelligence Simfund. Total flows into U.S.- and Luxembourg-domiciled funds
5 Source: ISS Market Intelligence Simfund. Total flows into High Yield Fund (U.S.-domiciled) and Global High Yield Bond Funds (Luxembourg- and U.K.-domiciled)
6 Source: ISS Market Intelligence Simfund. U.S.-domiciled ETF
7 Source: ISS Market Intelligence Simfund. Total flows into Emerging Markets Equity Funds (U.S.- and Luxembourg-domiciled) and Emerging Markets Fund (U.K.-domiciled)
8 Source: ISS Market Intelligence Simfund. Total flows into Large Cap Growth Fund (U.S.-domiciled) and U.S. Growth Fund (Luxembourg-domiciled)
9 Source: ISS Market Intelligence Simfund. Total flows into China A-Share Opportunities Funds (Luxembourg- and Hong Kong-domiciled), China Pioneer A-Share Fund (Hong Kong-domiciled) and China A Share Equity Fund (Taiwan-domiciled)
10 For footnote, refer to page 67 footnotes 29 and 30 in this Annual Report.

100 一百周年

YEARS OF

J.P. MORGAN IN CHINA

In 2021, J.P. Morgan will celebrate its 100th year in China. Today, the country represents one of the largest opportunities for our clients and the firm. For AWM, 2021 is especially important because we have agreed on terms with our joint venture partner to purchase China International Fund Management (CIFM), the culmination of a successful 17-year partnership. Given our firm's heritage in China, established brand, and current on-the-ground investment teams and distribution channels, we are very excited about the possibilities that full ownership of CIFM will bring to our business and clients – and we look forward to our next 100 years in China.

When you bring these strengths together – the focus on investment performance, the breadth and depth of our offering, and the expertise and advice we offer our clients – it's clear how, since 2010, we have averaged more than $100 billion per year in client flows[2] – quite rare in our industry.

Equally important, the acknowledgment from our clients has validated our strategy to be the leader in active management. Looking specifically at flows through this lens, I am very proud of the fact that Asset Management ranked #1 in global long-term active fund flows in 2020[11]. And across all of AWM, we maintained our #2 ranking against publicly traded peers in five-year cumulative total client asset flows[12].

Record year for shareholders

As a result of our clients' trust in us and the incredibly hard work of our employees, we delivered extraordinary results for our shareholders. This included record performance across nearly all financial metrics, including revenue, pretax income, net income, loans, deposits and assets.

Both of AWM's lines of business also performed well. **Asset Management** reached record revenue of $7.7 billion and record pretax income of $2.2 billion. The **Global Private Bank** was an equally powerful story, with record revenue of $6.6 billion and pretax income of $1.8 billion, despite the headwind of $263 million in credit costs as we grew our franchise[10].

11 Source: ISS Market Intelligence Simfund retrieved March 17, 2021. Excludes index, fund of funds and money market funds

12 For footnote, refer to page 67 footnote 26 in this Annual Report.

Investing in our business

Our success would not be possible without constant reinvestment in our business – to accelerate our growth, expand our offering, and maintain a strong risk and control framework. As a result of our long-term focus, increased scale and business momentum, our investment budget for 2021 is the largest in AWM's history. Our most significant investments are aligned with the following areas:

- **Hiring:** Grow market share domestically and internationally by hiring advisors and investment professionals.
- **Digital and Data:** Digitize everything, and leverage data to deliver insights to our clients, investors and advisors.
- **Environmental, Social and Governance:** Rank among the top three in active sustainable funds.
- **China:** Become the #1 foreign asset manager onshore in China.

Optimism for our future

Over a century ago, we launched one of our first investment funds, Mercantile Investment Trust. That fund, with a 136-year track record, thrives today as a great example of our consistent and steadfast management of assets. Clients choose J.P. Morgan as a long-term partner because we have withstood the test of time and are well-positioned for centuries to come.

As our business helps governments, central banks, individuals, corporations and pensions all around the world, we have a global perspective that few others enjoy. This, coupled with top-ranked performance in successfully managing client assets directly and in choosing third-party managers who we believe can do the same, gives us a unique understanding of the ever-changing investment landscape. That is why clients turn to us in uncertain times just as much as they do in more optimistic times. In 2020, we experienced both extremes.

Simply put, delivering performance and doing first-class business in a first-class way, decade after decade, is the core of what we do in AWM.

While new challenges undoubtedly lie ahead, I have never been more proud of the resiliency of our people, more grateful for our clients' trust and confidence or more optimistic about our business's future.

Mary

Mary Callahan Erdoes
CEO, Asset & Wealth Management

Corporate Responsibility

2020 will be remembered as a defining moment for humanity. It was a year that both reinforced and exacerbated profound inequities – from the pandemic's disproportionate impact on Black and Latinx communities, to the killing of Black citizens by police officers, to violence against members of the Asian and Pacific Islander community amid cries for racial justice. These events have brought a long overdue focus on removing barriers to racial equity, and they demand fundamental change around the globe.

Last April, I wrote that business needed to step up and collaborate with local, government and community leaders by providing resources and expertise to find solutions for those most in need. That same month, first-ever National Youth Poet Laureate Amanda Gorman shared a poem that read in part, "Do not ignore the pain. Give it purpose. Use it." Her sentiments have reverberated over this past painful year. It is time to change how we operate both public and private systems, dismantling what has been holding too many people back for far too long.

Today, 10 million Americans are out of work. The most financially vulnerable have been hit hardest, with Black and Latinx workers facing the highest unemployment rates, especially women[1]. Lower-income families are dealing with the largest drop in savings since April 2020. Even pre-pandemic, Black and Latinx families held less than 50 cents for every dollar in liquid assets compared with families who are white[2] – underlining the dire need for a truly inclusive economic recovery.

1 https://www.dol.gov/sites/dolgov/files/OPA/newsreleases/ui-claims/20210420.pdf

2 https://www.jpmorganchase.com/content/dam/jpmc/jpmorgan-chase-and-co/institute/pdf/institute-race-report.pdf

Getting back to better business – not business as usual – starts with acknowledging that we all have fallen short.

Throughout 2020, several thousand colleagues looked across our entire firm to examine where JPMorgan Chase could do more and do better. In October, we announced a massive $30 billion commitment over the next five years to advance racial equity, drive an inclusive recovery, support employees and break down barriers of systemic racism, including changes across our firm to help us better serve our customers, our communities and our own employees by leading with diversity, equity and inclusion. We were deeply honored that JPMorgan Chase was named the Corporate Funder of the Year by *Inside Philanthropy*, which noted the size, substance and strategic focus of our commitments.

Our company alone cannot end systemic racism, but we can do our part to drive clear policy, as well as business and community solutions, that create an inclusive recovery and promote shared prosperity. In February 2021, the JPMorgan Chase Institute and *Policy*Center shared new research and data-driven policy recommendations to inform immediate support to those most impacted by COVID-19, as well as longer-term policies to increase the financial health and stability of households and small businesses. These include support for extending and expanding unemployment benefits, providing additional rental assistance funding to stabilize families, and reforming Small Business Administration programs to better support Black, Latinx, women and other underserved entrepreneurs. This year, the J.P. Morgan International Council also put forth a series of recommendations, focused on the future of the international system and the future of work, advocating for business leaders to engage with policymakers to advance the public's interest – not just business – and drive solutions in the post-pandemic world.

Bringing bold ideas about an inclusive recovery and removing structural barriers are not just matters of better government policy and programs. Businesses must be at the table with ideas – and have a willingness to change their own practices – to effectively advance solutions that have the impact we so desperately need. That is why JPMorgan Chase is investing in economic opportunity. We will continue to develop better programs and products and advance policies that can lead to an inclusive economic recovery and opportunity for all.

Peter L. Scher
Head of Corporate Responsibility and Chairman of the Mid-Atlantic Region

> "For the sheer speed and size of its response to COVID and demands for racial equity, JPMorgan Chase earns the nod this year. It pledged – and is moving – a $250 million response to the pandemic, and a $30 billion (with a "b") commitment in loans, equity and direct funding toward racial equity. The company's giving is always strategic and substantial."
>
> *Inside Philanthropy*

Driving an inclusive recovery

In a year where our customers, employees and communities faced devastating social, economic and commercial consequences from the COVID-19 pandemic, JPMorgan Chase focused on applying the full force of its resources to serve all of its stakeholders. To address the immediate and long-term impact of COVID-19, our efforts included quickly deploying an initial $250 million in global business and philanthropic support to vulnerable and underserved communities, existing nonprofit partners and underserved small businesses.

Advancing racial equity

In October, JPMorgan Chase announced a $30 billion initiative to advance racial equity and address key drivers of the racial wealth divide, combat systemic racism and support our own employees.

Over the next five years, the firm will put this commitment into practice and help close the racial wealth divide by combining our business, policy, data and philanthropic expertise to increase affordable lending and housing, expand minority-owned small business credit and capital, help more people gain the skills they need to be successful and build a diverse workforce.

Advancing policy solutions through data

Our JPMorgan Chase Institute and *Policy*Center use firmwide data to analyze, develop and promote policy insights and solutions, educating and informing policymakers and business and nonprofit leaders. Through this work, we are able to advocate for sustainable solutions to economic inequality and help address other critical issues our communities are facing today.

Preparing workers for the future of work

Even before the pandemic, rapid changes in technology, automation and artificial intelligence continued to exacerbate the disconnect between skills and jobs. As part of our $350 million, five-year investment to equip young people and adults with the skills they need to be successful in a rapidly changing economy, JPMorgan Chase is developing pathways and policy recommendations to help underserved students gain better access to higher education and real-world work experiences. We have made this support also available to those workers, regardless of age, most affected by the COVID-19 pandemic. In addition, we are testing new strategies to upskill and reskill our own employees to address changes in technology and business needs.

Supporting small business growth and entrepreneurship

Small businesses are the backbone of our communities, and the COVID-19 pandemic has profoundly affected the entire sector. According to the JPMorgan Chase Institute, Black-, Latinx- and women-owned small businesses are underrepresented among firms with substantial external financing, limiting opportunities to scale their business.

To help eliminate these barriers, JPMorgan Chase announced a new $350 million, five-year global commitment to foster Black-, Latinx-, women-owned and other underserved small businesses. This includes philanthropic investments to support diverse-led nonprofit organizations; low-cost loans to invest in community development financial institutions (CDFIs); and direct equity investments in early-stage companies. As part of our commitment, JPMorgan Chase is also expanding its signature Entrepreneurs of Color Fund, which provides low-cost loans to minority-owned small businesses, to more U.S. cities in 2021.

Promoting neighborhood development

Affordable housing and homeownership are among the greatest factors that fuel the racial wealth divide. As a result, we are changing our business practices, advancing product innovation and advocating for more effective housing policies through our $30 billion commitment to advance racial equity.

In Chicago, seven organizations received a $7.2 million philanthropic investment to boost long-term homeownership. This includes promoting innovative modular home construction, as well as providing financial products and coaching in South and West side neighborhoods, including Back of the Yards, North Lawndale and Chicago Lawn.

Expanding financial health and wealth creation

As part of our five-year, $125 million commitment to improve financial health, JPMorgan Chase is leveraging its philanthropic capital and expertise to seed and scale technology-based innovations specifically for low- and moderate-income households around the world. Through the Financial Solutions Lab, part of our 10-year partnership with the Financial Health Network program, we have supported 40 fintech companies, whose innovative products collectively reach more than 4.5 million people and have helped U.S. residents save over $1 billion.

Globally, we support similar efforts to address the financial health needs of communities outside the U.S., including the Financial Inclusion Lab in India and the Catalyst Fund to stimulate financial inclusion in emerging markets.

Tackling climate change

JPMorgan Chase is committed to advancing sustainable solutions for our clients and within our own operations. We are adopting a financing commitment aligned with the goals of the Paris Agreement to help clients navigate the challenges and capitalize on the long-term economic and environmental benefits of transitioning to a low-carbon world. We'll establish intermediate emission targets for 2030 for our financing portfolio, focusing first on the oil and gas, electric power and automotive manufacturing sectors. We also committed to source renewable energy for 100% of the firm's power needs — such as installing on-site solar panels at our retail branches and commercial offices.

2020 HIGHLIGHTS AND ACCOMPLISHMENTS

Awards and recognition

- Ranked in Top 10 on *Fortune* magazine's World's Most Admired Companies list
- Ranked in Top 10 in Top Corporate Responders, a list assessing pandemic mobilization compiled by *Forbes* and JUST Capital
- Recognized by *Inside Philanthropy* as Corporate Funder of the Year for the firm's response to the COVID-19 crisis and demand for racial equity
- Earned 100% rating on the Human Rights Campaign's Corporate Equality Index 2020 – 18th consecutive year

Accomplishments

- Inclusive recovery: In 2020, the firm committed more than $500 million in low-cost loans, equity and philanthropic grants to address the immediate COVID-19 crisis, drive an inclusive recovery and advance racial equity. These efforts are targeted to help 1.3 million individuals gain access to financial coaching, help another 172,000 individuals enroll in jobs and skills programs, assist 64,000 underserved small businesses and create or preserve 43,000 affordable housing units.

- Community development and *Advancing*Cities: We helped bolster the long-term vitality of global cities through low-cost, long-term loans and philanthropic investments:
  - Building on JPMorgan Chase's $500 million commitment to drive inclusive growth and create greater economic opportunity in cities around the world, the firm awarded a total of $35 million to organizations in seven U.S. cities that won the firm's 2020 *Advancing*Cities Challenge: Baton Rouge, Boston, Chicago, Minneapolis, New Orleans, Philadelphia and Portland.
  - Advancing policy solutions: We released new policy papers to provide data-driven analyses and policy recommendations that address the pandemic's immediate and long-term financial impacts on households, small businesses and communities, as well as the need to ensure an equitable recovery.
- Careers and skills:
  - We invested $75 million to better prepare young people for the jobs of today and tomorrow, beginning in six U.S. cities: Boston, Columbus, Dallas, Denver, Indianapolis and Nashville.

  - We celebrated 10 years of The Fellowship Initiative (TFI) and renewed our commitment to improving economic and social outcomes for young Black and Latinx men. TFI will triple the number of young people it serves to more than 1,000 over the next 10 years and broaden its reach across several U.S. cities. The program has driven 100% admission to college among graduating Fellows; among these, more than half were the first in their family to attend college.
- Financial health:
  - In India, the Financial Inclusion Lab supported 30 fintechs, which have expanded their services to reach over 20 million people in underserved communities.
  - To date, the Financial Solutions Lab Accelerator has supported 43 fintech start-ups across six cohorts.
  - We provided immediate support to organizations, such as Mission Asset Fund and the International Rescue Committee (and its CDFI affiliate, the Center for Economic Opportunity), to provide financial coaching and affordable loans to households and small business owners with a focus on underserved communities.
  - We have been long-standing supporters of the Cities for Financial Empowerment Fund, including its Bank On initiative to equip accounts with common standards that make banking accessible to more people. We worked closely with them to ensure our clients could receive stimulus and other emergency payments safely through Chase, following social distancing protocols.
- Sustainability: Since 2003, our firm has committed over $23.9 billion in tax equity financing for wind, solar and geothermal energy projects in the U.S., including $5.7 billion for wind and solar projects in 2020. Through the Climate Leadership Council and membership in Business Roundtable, we've also supported market-based policy solutions to address carbon emissions. In 2020, we completed our inaugural green bond issuance of $1 billion.
- Small business expansion: JPMorgan Chase launched its Small Business Forward initiative in 2015. Over the last five years, the firm has provided more than $200 million in philanthropy, including $20 million in COVID-19 relief, to support underserved small businesses in cities around the world. These funds provided access to capital and technical support to over 1 million diverse small businesses, which have raised nearly $10 billion in capital and increased revenue by an average of 22%.
- Employees serving our communities:
  - More than 18,000 employees volunteered over 116,000 hours in 2020. This includes nearly 220 JPMorgan Service Corp volunteers from 13 countries who contributed nearly 9,500 hours working with nearly 50 nonprofits.
  - More than 500 employees participated in the Board Match Program, which deepens the impact of employees' donations to nonprofits when they also serve on the organization's board. In 2020, the firm matched more than $1.9 million in contributions to those nonprofits.
  - In 2020, our firm and its employees donated over $1 million to COVID-19 relief efforts and $7.2 million to disaster relief efforts around the globe.

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Note:

The following pages from JPMorgan Chase & Co.'s 2020 Form 10-K are not included herein: 1-42, 312-323

FIVE-YEAR SUMMARY OF CONSOLIDATED FINANCIAL HIGHLIGHTS (unaudited)

As of or for the year ended December 31, (in millions, except per share, ratio, headcount data and where otherwise noted)	2020	2019	2018	2017	2016
Selected income statement data					
Total net revenue[(a)]	**$ 119,543**	$ 115,399	$ 108,783	$ 100,460	$ 96,275
Total noninterest expense[(a)]	**66,656**	65,269	63,148	59,270	56,378
Pre-provision profit[(b)]	**52,887**	50,130	45,635	41,190	39,897
Provision for credit losses	**17,480**	5,585	4,871	5,290	5,361
Income before income tax expense	**35,407**	44,545	40,764	35,900	34,536
Income tax expense	**6,276**	8,114	8,290	11,459	9,803
Net income	**$ 29,131**	$ 36,431	$ 32,474	$ 24,441 [(h)]	$ 24,733
Earnings per share data					
Net income: Basic	**$ 8.89**	$ 10.75	$ 9.04	$ 6.35	$ 6.24
Diluted	**8.88**	10.72	9.00	6.31	6.19
Average shares: Basic	**3,082.4**	3,221.5	3,396.4	3,551.6	3,658.8
Diluted	**3,087.4**	3,230.4	3,414.0	3,576.8	3,690.0
Market and per common share data					
Market capitalization	**$ 387,492**	$ 429,913	$ 319,780	$ 366,301	$ 307,295
Common shares at period-end	**3,049.4**	3,084.0	3,275.8	3,425.3	3,561.2
Book value per share	**81.75**	75.98	70.35	67.04	64.06
Tangible book value per share (“TBVPS”)[(b)]	**66.11**	60.98	56.33	53.56	51.44
Cash dividends declared per share	**3.60**	3.40	2.72	2.12	1.88
Selected ratios and metrics					
Return on common equity (“ROE”)[(c)]	**12 %**	15 %	13 %	10 %	10 %
Return on tangible common equity (“ROTCE”)[(b)(c)]	**14**	19	17	12	13
Return on assets (“ROA”)[(b)]	**0.91**	1.33	1.24	0.96	1.00
Overhead ratio	**56**	57	58	59	59
Loans-to-deposits ratio[(d)]	**47**	64	69	66	67
Firm Liquidity coverage ratio (“LCR”) (average)[(e)]	**110**	116	113	119	NA
JPMorgan Chase Bank, N.A. LCR (average)[(e)]	**160**	116	111	108	NA
Common equity tier 1 (“CET1”) capital ratio[(f)(g)]	**13.1**	12.4	12.0	12.2	12.3
Tier 1 capital ratio[(f)(g)]	**15.0**	14.1	13.7	13.9	14.0
Total capital ratio[(f)(g)]	**17.3**	16.0	15.5	15.9	15.5
Tier 1 leverage ratio[(f)(g)]	**7.0**	7.9	8.1	8.3	8.4
Supplementary leverage ratio (“SLR”)[(f)(g)]	**6.9 %**	6.3 %	6.4 %	6.5 %	6.5 %
Selected balance sheet data (period-end)					
Trading assets[(d)]	**$ 503,126**	$ 369,687	$ 378,551	$ 349,053	$ 342,436
Investment securities, net of allowance for credit losses	**589,999**	398,239	261,828	249,958	289,059
Loans[(d)]	**1,012,853**	997,620	1,015,760	959,429	922,831
Total assets	**3,386,071**	2,687,379	2,622,532	2,533,600	2,490,972
Deposits	**2,144,257**	1,562,431	1,470,666	1,443,982	1,375,179
Long-term debt	**281,685**	291,498	282,031	284,080	295,245
Common stockholders’ equity	**249,291**	234,337	230,447	229,625	228,122
Total stockholders’ equity	**279,354**	261,330	256,515	255,693	254,190
Headcount	**255,351**	256,981	256,105	252,539	243,355
Credit quality metrics					
Allowances for loan losses and lending-related commitments	**$ 30,737**	$ 14,314	$ 14,500	$ 14,672	$ 14,854
Allowance for loan losses to total retained loans	**2.95 %**	1.39 %	1.39 %	1.47 %	1.55 %
Nonperforming assets[(d)]	**$ 10,906**	$ 5,054	$ 5,901	$ 7,119	$ 7,754
Net charge-offs	**5,259**	5,629	4,856	5,387	4,692
Net charge-off rate	**0.55 %**	0.60 %	0.52 %	0.60 % [(i)]	0.54 %

Effective January 1, 2020, the Firm adopted the Financial Instruments – Credit Losses (“CECL”) accounting guidance. Refer to Note 1 for further information.

(a) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.

(b) Pre-provision profit, TBVPS and ROTCE are each non-GAAP financial measures. Tangible common equity (“TCE”) is also a non-GAAP financial measure. Refer to Explanation and Reconciliation of the Firm’s Use of Non-GAAP Financial Measures on pages 62–64 for a further discussion of these measures.

(c) Quarterly ratios are based upon annualized amounts.

(d) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.

(e) For the years ended December 31, 2020, 2019, 2018 and 2017, the percentage represents average LCR for the three months ended December 31, 2020, 2019, 2018 and 2017. The U.S. LCR public disclosure requirements for the Firm became effective in 2017. Refer to Liquidity Risk Management on pages 102–108 for additional information on the LCR results.

(f) As of December 31, 2020, the capital metrics reflect the relief provided by the Federal Reserve Board in response to the COVID-19 pandemic, including the CECL capital transition provisions that became effective in the first quarter of 2020. As of December 31, 2020, the SLR reflects the temporary exclusions of U.S. Treasury securities and deposits at Federal Reserve Banks that became effective in the second quarter of 2020. Refer to Regulatory Developments Relating to the COVID-19 Pandemic on pages 52-53 and Capital Risk Management on pages 91-101 for additional information.

(g) The Basel III capital rules became fully phased-in effective January 1, 2019, and for the SLR became fully phased-in effective January 1, 2018. Prior to these dates, the required capital metrics were subject to the transitional rules. As of December 31, 2018, the risk-based capital metrics were the same on a fully phased-in and transitional basis. Refer to Capital Risk Management on pages 91-101 for additional information on these capital metrics.

(h) In December 2017, the Tax Cuts and Jobs Act (“TCJA”) was signed into law. The Firm’s results for the year ended December 31, 2017 included a $2.4 billion decrease to net income as a result of the enactment of the TCJA.

(i) Excluding net charge-offs of $467 million related to the student loan portfolio sale, the net charge-off rate for the year ended December 31, 2017 would have been 0.55%.

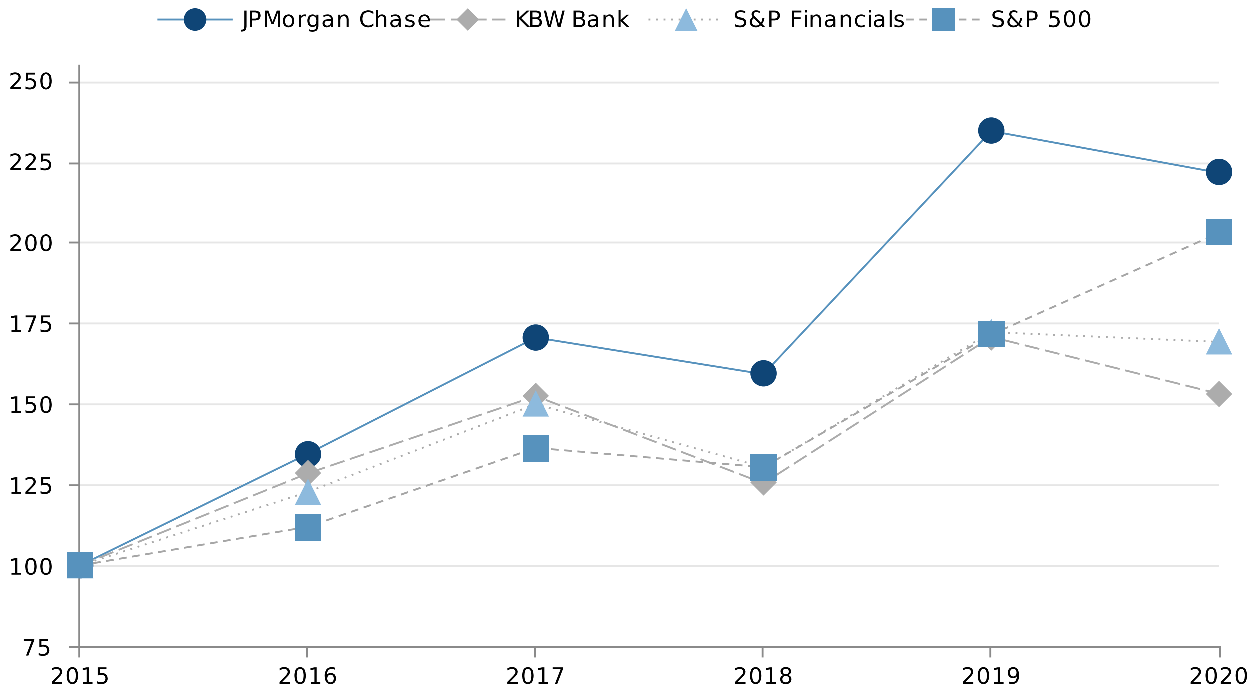
FIVE-YEAR STOCK PERFORMANCE

The following table and graph compare the five-year cumulative total return for JPMorgan Chase & Co. ("JPMorgan Chase" or the "Firm") common stock with the cumulative return of the S&P 500 Index, the KBW Bank Index and the S&P Financials Index. The S&P 500 Index is a commonly referenced equity benchmark in the United States of America ("U.S."), consisting of leading companies from different economic sectors. The KBW Bank Index seeks to reflect the performance of banks and thrifts that are publicly traded in the U.S. and is composed of leading national money center and regional banks and thrifts. The S&P Financials Index is an index of financial companies, all of which are components of the S&P 500. The Firm is a component of all three industry indices.

The following table and graph assume simultaneous investments of $100 on December 31, 2015, in JPMorgan Chase common stock and in each of the above indices. The comparison assumes that all dividends were reinvested.

December 31, (in dollars)	2015	2016	2017	2018	2019	**2020**
JPMorgan Chase	$ 100.00	$ 134.57	$ 170.54	$ 159.20	$ 234.46	**$ 221.52**
KBW Bank Index	100.00	128.51	152.41	125.42	170.72	**153.12**
S&P Financials Index	100.00	122.75	149.92	130.37	172.21	**169.19**
S&P 500 Index	100.00	111.95	136.38	130.39	171.44	**202.96**

December 31,
(in dollars)



Management's discussion and analysis

The following is Management's discussion and analysis of the financial condition and results of operations ("MD&A") of JPMorgan Chase for the year ended December 31, 2020. The MD&A is included in both JPMorgan Chase's Annual Report for the year ended December 31, 2020 ("Annual Report") and its Annual Report on Form 10-K for the year ended December 31, 2020 ("2020 Form 10-K") filed with the Securities and Exchange Commission ("SEC"). Refer to the Glossary of terms and acronyms on pages 305-311 for definitions of terms and acronyms used throughout the Annual Report and the 2020 Form 10-K.

The MD&A contains statements that are forward-looking within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are based on the current beliefs and expectations of JPMorgan Chase's management and are subject to significant risks and uncertainties. Refer to Forward-looking Statements on page 157) and Part 1, Item 1A: Risk factors in the 2020 Form 10-K on pages 8-32 for a discussion of certain of those risks and uncertainties and the factors that could cause JPMorgan Chase's actual results to differ materially because of those risks and uncertainties.

INTRODUCTION

JPMorgan Chase & Co. (NYSE: JPM), a financial holding company incorporated under Delaware law in 1968, is a leading financial services firm based in the United States of America ("U.S."), and has operations worldwide; JPMorgan Chase had $3.4 trillion in assets and $279.4 billion in stockholders' equity as of December 31, 2020. The Firm is a leader in investment banking, financial services for consumers and small businesses, commercial banking, financial transaction processing and asset management. Under the J.P. Morgan and Chase brands, the Firm serves millions of customers in the U.S. and globally many of the world's most prominent corporate, institutional and government clients.

JPMorgan Chase's principal bank subsidiary is JPMorgan Chase Bank, National Association ("JPMorgan Chase Bank, N.A."), a national banking association with U.S. branches in 38 states and Washington, D.C. as of December 31, 2020. JPMorgan Chase's principal nonbank subsidiary is J.P. Morgan Securities LLC ("J.P. Morgan Securities"), a U.S. broker-dealer. The bank and non-bank subsidiaries of JPMorgan Chase operate nationally as well as through overseas branches and subsidiaries, representative offices and subsidiary foreign banks. The Firm's principal operating subsidiary outside the U.S. is J.P. Morgan Securities plc, a U.K.-based subsidiary of JPMorgan Chase Bank, N.A.

For management reporting purposes, the Firm's activities are organized into four major reportable business segments, as well as a Corporate segment. The Firm's consumer business is the Consumer & Community Banking ("CCB") segment. The Firm's wholesale business segments are the Corporate & Investment Bank ("CIB"), Commercial Banking ("CB"), and Asset & Wealth Management ("AWM"). Refer to Business Segment Results on pages 65–84, and Note 32 for a description of the Firm's business segments, and the products and services they provide to their respective client bases.

This executive overview of the MD&A highlights selected information and does not contain all of the information that is important to readers of this 2020 Form 10-K. For a complete description of the trends and uncertainties, as well as the risks and critical accounting estimates, affecting the Firm and its various LOBs, this 2020 Form 10-K should be read in its entirety.

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. Refer to Note 1 for further information.

Financial performance of JPMorgan Chase

Year ended December 31, (in millions, except per share data and ratios)	2020	2019	Change
Selected income statement data			
Total net revenue[(a)]	**$119,543**	$115,399	4 %
Total noninterest expense[(a)]	**66,656**	65,269	2
Pre-provision profit	**52,887**	50,130	5
Provision for credit losses	**17,480**	5,585	213
Net income	**29,131**	36,431	(20)
Diluted earnings per share	**8.88**	10.72	(17)
Selected ratios and metrics			
Return on common equity	**12 %**	15 %	
Return on tangible common equity	**14**	19	
Book value per share	**$ 81.75**	$ 75.98	8
Tangible book value per share	**66.11**	60.98	8
Capital ratios[(b)]			
CET1	**13.1 %**	**12.4 %**	
Tier 1 capital	**15.0**	**14.1**	
Total capital	**17.3**	**16.0**	

(a) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.

(b) As of December 31, 2020, the capital metrics reflect the relief provided by the Federal Reserve Board in response to the COVID-19 pandemic, including the CECL capital transition provisions that became effective in the first quarter of 2020. Refer to Regulatory Developments relating to the COVID-19 Pandemic on pages 52-53 and Capital Risk Management on pages 91-101 for additional information.

Comparisons noted in the sections below are for the full year of 2020 versus the full year of 2019, unless otherwise specified.

Firmwide overview

JPMorgan Chase reported net income of $29.1 billion for 2020, or $8.88 per share, on net revenue of $119.5 billion. The Firm reported ROE of 12% and ROTCE of 14%. The Firm's results for 2020 included net additions to the allowance for credit losses of $12.2 billion and Firmwide legal expense of $1.1 billion.

- The Firm had net income of $29.1 billion, down 20%.
- Total net revenue was up 4%. Noninterest revenue was $65.0 billion, up 12%, driven by higher CIB Markets revenue, Investment Banking fees and net production revenue in Home Lending. Net interest income was $54.6 billion, down 5%, driven by the impact of lower rates, predominantly offset by higher net interest income in CIB Markets as well as balance sheet growth.
- Noninterest expense was $66.7 billion, up 2%, driven by higher volume- and revenue-related expense, legal expense and continued investments in the businesses, partially offset by lower structural expense.
- The provision for credit losses was $17.5 billion, up $11.9 billion from the prior year, driven by net additions to the allowance for credit losses of $12.2 billion due to the deterioration and increased uncertainty in the macroeconomic environment as a result of the impact of the COVID-19 pandemic.
- The total allowance for credit losses was $30.8 billion at December 31, 2020. The Firm had an allowance for loan losses to retained loans coverage ratio of 2.95%, compared with 1.39% in the prior year; the increase from the prior year was driven by the additions to the allowance for credit losses and the adoption of CECL.
- The Firm's nonperforming assets totaled $10.9 billion at December 31, 2020, an increase of $5.9 billion from the prior year, primarily reflecting client credit deterioration across multiple industries in the wholesale portfolio; and in the consumer portfolio, loans placed on nonaccrual status related to the impact of the COVID-19 pandemic, as well as the adoption of CECL, as the purchased credit deteriorated loans in the mortgage portfolio became subject to nonaccrual loan treatment. In the fourth quarter of 2020, nonperforming assets decreased $556 million from the prior quarter, reflecting some credit improvement in the wholesale portfolio. The consumer portfolio remained relatively flat, as the increase in loans placed on nonaccrual status in Home Lending related to the impact of the COVID-19 pandemic was predominantly offset by lower loans at fair value in CIB, largely due to sales.
- Firmwide average loans of $1.0 trillion were up 1%, driven by higher loan balances in AWM and CIB, as well as loans originated under the Small Business Administration's ("SBA") Paycheck Protection Program ("PPP"), predominantly offset by lower loan balances in Home Lending and Card.
- Firmwide average deposits of $1.9 trillion were up 25%, reflecting significant inflows across the Firm, primarily driven by the impact of the COVID-19 pandemic and the related effect of certain government actions.
- As of December 31, 2020, the Firm had average eligible High Quality Liquid Assets ("HQLA") of approximately $697 billion and unencumbered marketable securities with a fair value of approximately $740 billion, resulting in approximately $1.4 trillion of liquidity sources. Refer to Liquidity Risk Management on pages 102–108 for additional information.

Selected capital-related metrics

- The Firm's CET1 capital was $205 billion, and the Standardized and Advanced CET1 ratios were 13.1% and 13.8%, respectively.
- The Firm's SLR was 6.9%. The SLR reflects the temporary exclusions of U.S. Treasury securities and deposits at Federal Reserve Banks, as required by the Federal Reserve's interim final rule issued on April 1, 2020. The Firm's SLR excluding the temporary relief was 5.8%.
- The Firm grew TBVPS, ending 2020 at $66.11, up 8% versus the prior year.

Pre-provision profit, ROTCE and TBVPS are non-GAAP financial measures. Refer to Explanation and Reconciliation of the Firm's Use of Non-GAAP Financial Measures on pages 62-64, and Capital Risk Management on pages 91-101 for a further discussion of each of these measures.

Business segment highlights

Selected business metrics for each of the Firm's four LOBs are presented below for the full year of 2020.

CCB ROE 15%	• Average deposits up 22%; client investment assets up 17% • Average loans down 6%; debit and credit card sales volume down 3% • Active mobile customers up 10%
CIB ROE 20%	• $9.5 billion of Global Investment Banking fees, up 25% • #1 ranking for Global Investment Banking fees with 9.2% wallet share for the year • Total Markets revenue of $29.5 billion, up 41%, with Fixed Income Markets up 45% and Equity Markets up 33%
CB ROE 11%	• Gross Investment Banking revenue of $3.3 billion, up 22% • Average deposits up 38%; average loans up 5%
AWM ROE 28%	• Assets under management (AUM) of $2.7 trillion, up 17% • Average deposits up 20%; average loans up 13%

Refer to the Business Segment Results on pages 65-66 for a detailed discussion of results by business segment.

Credit provided and capital raised

JPMorgan Chase continues to support consumers, businesses and communities around the globe. The Firm provided new and renewed credit and raised capital for wholesale and consumer clients during 2020, consisting of:

$2.3 trillion	Total credit provided and capital raised (including loans and commitments)[(a)]
$226 billion	Credit for consumers
$18 billion	Credit for U.S. small businesses
$865 billion	Credit for corporations
$1.1 trillion	Capital raised for corporate clients and non-U.S. government entities
$103 billion	Credit and capital raised for nonprofit and U.S. government entities[(b)]
$28 billion	Loans under the Small Business Administration's Paycheck Protection Program

(a) Excludes loans under the SBA's PPP.
(b) Includes states, municipalities, hospitals and universities.

Recent events

- On January 27, 2021, JPMorgan Chase announced that it will launch a digital retail bank in the U.K. this year, and on February 23, 2021, JPMorgan Chase announced that it will appoint Sanoke Viswanathan, head of International Consumer, to the Operating Committee.
- On December 31, 2020, JPMorgan Chase acquired the Global Loyalty business (“cxLoyalty”) of cxLoyalty Group Holdings, Inc. This includes cxLoyalty’s technology platforms, full-service travel agency, and gift card and merchandise services.
- On December 31, 2020, JPMorgan Chase acquired 55ip, a financial technology company and leading provider of automated tax-smart investment strategies.
- On December 18, 2020, JPMorgan Chase received the results of the 2020 Comprehensive Capital Analysis and Review (“CCAR”) Round 2 stress test from the Federal Reserve. The Firm’s Stress Capital Buffer (“SCB”) requirement remained at 3.3%. The Federal Reserve also announced that all large banks, including the Firm, could resume share repurchases commencing in the first quarter of 2021, subject to certain restrictions. The Firm's Board of Directors has authorized a new common share repurchase program for up to $30 billion. The Firm expects to repurchase up to $4.5 billion of common stock in the first quarter of 2021 and, subject to approval by the Board of Directors, maintain the quarterly common stock dividend of $0.90 per share.
- On December 18, 2020, JPMorgan Chase announced the retirement of Lee Raymond, the Firm’s Lead Independent Director. Stephen B. Burke has succeeded Mr. Raymond as Lead Independent Director effective January 1, 2021.
- On December 7, 2020, Phebe N. Novakovic became a member of the Firm's Board of Directors. Ms. Novakovic is Chairman and Chief Executive Officer of General Dynamics Corporation.

2021 outlook

These current expectations are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements are based on the current beliefs and expectations of JPMorgan Chase’s management and are subject to significant risks and uncertainties. Refer to Forward-Looking Statements on page 157, and the Risk Factors section on pages 8-32 of the Firm’s 2020 Form 10-K, for a further discussion of certain of those risks and uncertainties and the other factors that could cause JPMorgan Chase’s actual results to differ materially because of those risks and uncertainties. There is no assurance that actual results in 2021 will be in line with the outlook set forth below, and the Firm does not undertake to update any forward-looking statements.

JPMorgan Chase’s current outlook for 2021 should be viewed against the backdrop of the global and U.S. economies, the COVID-19 pandemic, financial markets activity, the geopolitical environment, the competitive environment, client and customer activity levels, and regulatory and legislative developments in the U.S. and other countries where the Firm does business. Each of these factors will affect the performance of the Firm and its LOBs. The Firm will continue to make appropriate adjustments to its businesses and operations in response to ongoing developments in the business, economic, regulatory and legal environments in which it operates. The outlook information contained in this Form 10-K supersedes all outlook information included in the Firm’s periodic reports furnished or filed with the SEC prior to the date of this Form 10-K.

Full-year 2021

- Management expects net interest income, on a managed basis, to be approximately $55 billion, market dependent.
- Management expects adjusted expense to be approximately $69 billion, which includes accelerated contributions to the Firm’s Foundation in the form of equity investments, as well as higher revenue-related expense.

First-quarter 2021

- Management expects net interest income, on a managed basis, to be approximately $13 billion, market dependent.
- Investment banking fees are expected to be flat when compared with the fourth quarter of 2020, depending on market conditions.

Fourth-quarter 2021

- Management expects net interest income, on a managed basis, to be in excess of $14 billion, market dependent.

Net interest income, on a managed basis, and adjusted expense are non-GAAP financial measures. Refer to Explanation and Reconciliation of the Firm’s Use of Non-GAAP Financial Measures on pages 62-64.

Business Developments

COVID-19 Pandemic

In response to the COVID-19 pandemic the Firm invoked resiliency plans to allow its businesses to remain operational, utilizing disaster recovery sites and implementing alternative work arrangements globally.

Additionally, the Firm implemented strategies and procedures designed to help it respond to increased market volatility, client demand for credit and liquidity, distress in certain industries and the ongoing impacts to consumers and businesses.

Throughout 2020, the Firm remained focused on serving its clients, customers and communities, as well as the well-being of its employees, during the pandemic. The Firm continues to actively monitor the health and safety situations at local and regional levels, and will continue to adapt as these situations evolve.

Supporting clients and customers
The Firm has supported its clients and customers during the challenging conditions caused by the COVID-19 pandemic by providing assistance, primarily in the form of payment deferrals on loans and extending credit, including through its participation in the Small Business Association's ("SBA") PPP.

Refer to Credit Portfolio on page 112 for information on assistance granted to customers and clients. Refer to Consumer Credit portfolio on page 116 and Wholesale Credit Portfolio on page 122 for information on retained loans under payment deferral.

The Firm has gradually re-opened its branches since April 2020, with nearly 90% of its branches returning to full service as of December 31, 2020. Additionally, the Firm continues to provide a wide range of banking services that are accessible to clients and customers through mobile and other digital channels.

Protecting and supporting employees
In response to the COVID-19 pandemic, the Firm implemented alternative work arrangements, with the vast majority of its global workforce working from home since the onset of the pandemic and continuing into the first quarter of 2021. The Firm also provided additional benefits to employees during the COVID-19 pandemic.

Supporting communities
Since March, the Firm has committed $250 million to help address humanitarian needs and long-term economic challenges posed by the COVID-19 pandemic on the communities in which the Firm operates. As of December 31, 2020, over 75% of this commitment has been funded.

Departure of the U.K. from the EU

The U.K.'s departure from the EU, which is commonly referred to as "Brexit," was completed on December 31, 2020. The U.K. and the EU have entered into a Trade and Cooperation Agreement which delineates many significant aspects of the future relationship between the U.K. and the EU. However, the agreement contained very limited provisions relating to cross-border financial services, and the U.K. and the EU are expected to engage in further negotiations concerning financial services.

The Firm has executed and continues to execute on its Firmwide Brexit Implementation program, which encompasses a strategic implementation plan across all impacted businesses and functions, including an ongoing assessment of political, legal and regulatory and other implementation risks. A key focus of the program has been to ensure continuity of service to the Firm's EU clients in the following areas: regulatory and legal entities; clients; and business and operations.

Regulatory and legal entities
The Firm's legal entities in Germany, Luxembourg and Ireland are now licensed to provide and are providing services to the Firm's EU clients, including through a branch network covering locations such as Paris, Madrid and Milan. Subject to limited exceptions, the Firm's U.K.-based legal entities are no longer permitted to transact business from the U.K. with EU clients.

Clients
Agreements covering substantially all of the Firm's EU client activity have been re-documented to EU legal entities to facilitate continuation of service. The Firm continues to actively engage with those clients that have not completed re-documentation or required operational changes.

Business and operations
The COVID-19 pandemic introduced additional risk to the Firm's Brexit Implementation program, particularly in relation to staff relocations. As a result, the Firm has worked closely with regulators and employees to ensure that critical staff are relocated in a safe and timely manner so that the Firm can meet its regulatory commitments and continue serving its clients. Further relocations are planned for 2021, and the Firm's longer-term EU staffing strategy will be developed over time in cooperation with its regulators and as the post-Brexit market landscape evolves in order to ensure that the Firm maintains operational resilience and effective client coverage.

Interbank Offered Rate ("IBOR") transition

JPMorgan Chase and other market participants continue to make progress in preparing for the discontinuation of the London Interbank Offered Rate ("LIBOR") and other IBORs to comply with the International Organization of Securities Commission's standards for transaction-based benchmark rates.

On November 30, 2020, ICE Benchmark Administration, the administrator of LIBOR, announced a public consultation on its proposal to cease the publication of the principal tenors of U.S. dollar LIBOR (i.e., overnight, one-month, three-month, six-month and 12-month LIBOR) immediately following a final publication on June 30, 2023. The Federal Reserve, the OCC and the FDIC also released guidance encouraging market participants to cease dealing in new U.S. dollar LIBOR contracts from the end of 2021. There has been no change in the scheduled cessation of U.K. sterling, Japanese yen, Swiss franc and Euro LIBOR, or the remaining tenors of U.S. dollar LIBOR, from December 31, 2021.

The Firm continues to work towards reducing its exposure to IBOR-referencing contracts, including derivatives, bilateral and syndicated loans, securities, and debt and preferred stock issuances, to meet the industry milestones and recommendations published by National Working Groups ("NWG"), including the Alternative Reference Rates Committee (the "ARRC") in the U.S.

On October 23, 2020, the International Swaps and Derivatives Association, Inc. ("ISDA") published a new supplement to the ISDA 2006 definitions and the related 2020 IBOR Fallbacks Protocol (the "Protocol"). These publications are intended to facilitate the incorporation of robust rate fallback provisions into both legacy and new derivative contracts with effect from January 25, 2021. The Firm's client-facing legal entities have agreed to adhere to the Protocol, in accordance with recommendations from multiple industry working groups, including the ARRC. ISDA further announced that bilateral templates have been made available for use with counterparties who choose not to adhere to the Protocol.

As a key objective of the ARRC's transition plan to encourage adoption of the Secured Overnight Financing Rate ("SOFR"), counterparty clearing houses, clearing house members and other impacted market participants successfully executed the discounting and price alignment interest ("PAI") switch from federal funds to SOFR on October 16, 2020. The industry completed a similar switch from EONIA to €STR on July 27, 2020.

On March 12, 2020 and January 7, 2021, the Financial Accounting Standards Board ("FASB") issued accounting standards updates providing optional expedients and exceptions for applying generally accepted accounting principles to contracts and hedge accounting relationships affected by reference rate reform. These optional expedients are intended to simplify the operational impact of applying U.S. GAAP to transactions impacted by reference rate reform. The Firm elected to apply certain of these expedients beginning in the third quarter of 2020. On August 27, 2020, the International Accounting Standards Board ("IASB") issued guidance that provides similar relief for entities reporting under International Financial Reporting Standards ("IFRS"). Refer to Accounting and Reporting Developments on page 156 for additional information. The Firm continues to monitor the transition relief being considered by the U.S. Treasury Department regarding the tax implications of reference rate reform.

The Firm's initiatives in connection with LIBOR transition include:

- continuing to reduce its overall exposure to LIBOR
- implementing rate fallback provisions developed by NWGs in new LIBOR contracts, where appropriate
- continuing to educate and inform clients on LIBOR transition and the necessity to prepare for the cessation of LIBOR
- assisting clients with discontinuing their issuance or use of LIBOR-linked products within the timelines specified by NWGs
- supporting clients in their efforts to remediate contracts linked to LIBOR, including contracts to which the Firm is a party, which it manages or for which it acts as agent
- offering products linked to alternative reference rates ("ARRs") across its businesses, and
- planning for the implementation of rate fallback mechanisms across products based on the conventions recommended by NWGs to prepare for transition to ARRs upon the cessation of various IBORs.

The Firm is on schedule to implement necessary changes to operational and risk management systems in order to transition away from IBORs, including by aiming to meet proposed deadlines set by NWGs for the cessation of new contracts referencing these benchmarks. The Firm continues to engage with and remains committed to NWGs in devising solutions to unresolved issues relating to IBOR transition.

The Firm continues to engage with market participants, NWGs and regulators to address market-wide challenges associated with LIBOR transition, including efforts to:

- improve liquidity in ARRs
- develop and introduce forward-looking term rates linked to ARRs, and
- support legislative proposals in the U.S., the U.K. and the EU that aim to resolve concerns involving "tough legacy" contracts (i.e. contracts that do not provide for automatic conversion to another rate or that are difficult to amend in order to add rate fallback provisions).

Resolution of these challenges should provide more certainty and help to provide a framework for market participants in transitioning away from IBORs.

Regulatory Developments Relating to the COVID-19 Pandemic

Since March 2020, the U.S. government as well as central banks and banking authorities around the world have taken and continue to take actions to help individuals, households and businesses that have been adversely affected by the economic disruption caused by the COVID-19 pandemic. The CARES Act and the Consolidated Appropriations Act, which were signed into law on March 27, 2020 and December 27, 2020, respectively, provide, among other things, funding to support loan facilities to assist consumers and businesses. Set forth below is a summary as of the date of this Form 10-K of U.S. government actions currently impacting the Firm and U.S. government programs in which the Firm is participating. The Firm will continue to assess ongoing developments in government actions in response to the COVID-19 pandemic.

U.S. government actions

Eligible retained income definition. On March 17, 2020, the Office of the Comptroller of the Currency ("OCC"), the Board of Governors of the Federal Reserve System ("Federal Reserve"), and the Federal Deposit Insurance Corporation ("FDIC"), collectively the "federal banking agencies," issued an interim final rule (issued as final on August 26, 2020) that revised the definition of "eligible retained income" in the regulatory capital rules that apply to all U.S. banking organizations. On March 23, 2020, the Federal Reserve issued an interim final rule (issued as final on August 26, 2020) that revised the definition of "eligible retained income" for purposes of the total loss-absorbing capacity ("TLAC") buffer requirements that apply to global systemically important banking organizations. The revised definition of eligible retained income makes any automatic limitations on payout distributions that could apply under the agencies' capital rules or TLAC rule take effect on a more graduated basis in the event that a banking organization's capital, leverage and TLAC ratios were to decline below regulatory requirements (including buffers). The March 17, 2020 interim final rule was issued, in conjunction with an interagency statement encouraging banking organizations to use their capital and liquidity buffers, to further support banking organizations' abilities to lend to households and businesses affected by the COVID-19 pandemic.

Reserve requirements. On March 24, 2020, the Federal Reserve issued an interim final rule (issued as final on December 22, 2020) reducing reserve requirement ratios for all depository institutions to zero percent, effective March 26, 2020, an action intended to free up liquidity in the banking system to support lending to households and businesses.

Refer to Note 26 for additional information on the reduction to the reserve requirement.

Regulatory Capital - Current Expected Credit Losses ("CECL") transition delay. On March 31, 2020, the federal banking agencies issued an interim final rule (issued as final on August 26, 2020) that provided banking organizations with the option to delay the effects of CECL on regulatory capital for two years, followed by a three-year transition period ("CECL capital transition provisions"). The Firm elected to apply the CECL capital transition provisions.

Supplementary leverage ratio ("SLR") temporary revision. On April 1, 2020, the Federal Reserve issued an interim final rule that requires, on a temporary basis, the calculation of total leverage exposure for purposes of calculating the SLR for bank holding companies ("BHC"), to exclude the on-balance sheet amounts of U.S. Treasury securities and deposits at Federal Reserve Banks. These exclusions became effective April 1, 2020, and will remain in effect through March 31, 2021.

Refer to Capital Risk Management on pages 91-101 and Note 27 for additional information on the CECL capital transition provisions, the impact to the Firm's capital metrics and the Firm's SLR.

Loan modifications. On April 7, 2020, the federal banking agencies along with the National Credit Union Administration, and the Consumer Financial Protection Bureau, in consultation with the state financial regulators, issued an interagency statement revising a March 22, 2020 interagency statement on loan modifications and the reporting for financial institutions working with customers affected by the COVID-19 pandemic (the "IA Statement"). The IA Statement reconfirmed that efforts to work with borrowers where the loans are prudently underwritten, and not considered past due or carried on nonaccrual status, should not result in the loans automatically being considered modified in a troubled debt restructuring ("TDR") for accounting and financial reporting purposes, or for purposes of their respective risk-based capital rules, which would otherwise require financial institutions subject to the capital rules to hold more capital. The IA Statement also clarified the interaction between its previous guidance and Section 4013 of the CARES Act, as extended by Section 541 of the Consolidated Appropriations Act, which provides certain financial institutions with the option to suspend the application of accounting guidance for TDRs for a limited period of time for loan modifications made to address the effects of the COVID-19 pandemic.

The Firm has granted various forms of assistance to customers and clients impacted by the COVID-19 pandemic, including payment deferrals and covenant modifications. The majority of the Firm's COVID-19 related loan modifications have not been considered TDRs because:

- they represent short-term or other insignificant modifications, whether under the Firm's regular loan modification assessments or the IA Statement guidance, or
- the Firm has elected to apply the option to suspend the application of accounting guidance for TDRs as provided by

the CARES Act and extended by the Consolidated Appropriations Act.

To the extent that certain modifications do not meet any of the above criteria, the Firm accounts for them as TDRs. Refer to Credit Portfolio on pages 112-113 and Note 12 for additional information on the Firm's loan modification activities.

PPP. Beginning April 3, 2020, the PPP, established by the CARES Act and administered by the SBA, authorized eligible lenders to provide nonrecourse loans to eligible borrowers until August 8, 2020 to provide an incentive for these businesses to keep their workers on their payroll. As part of the Consolidated Appropriations Act, additional funding was provided for new PPP loans beginning in early January 2021. This program was designed to target smaller businesses as well as to simplify the loan forgiveness process for loans under $150,000. As of February 19, 2021, the Firm has funded approximately $5 billion under this extension of the program.

U.S. government facilities. Beginning in March 2020, the Federal Reserve announced a suite of facilities using its emergency lending powers under section 13(3) of the Federal Reserve Act to support the flow of credit to individuals, households and businesses adversely affected by the COVID-19 pandemic and to support the broader economy.

The Firm has participated and is participating in the PPP and certain of the other government facilities and programs, as needed, to assist its clients and customers or to support the broader economy. Refer to Capital Risk Management on pages 91-101, Liquidity Risk Management on pages 102–108, Credit Portfolio on pages 112-113, Note 12 and Note 27 for additional information on the Firm's participation in the PPP and other government facilities and programs.

CONSOLIDATED RESULTS OF OPERATIONS

This section provides a comparative discussion of JPMorgan Chase's Consolidated Results of Operations on a reported basis for the two-year period ended December 31, 2020, unless otherwise specified. Refer to Consolidated Results of Operations on pages 48-51 of the Firm's Annual Report on Form 10-K for the year ended December 31, 2019 (the "2019 Form 10-K") for a discussion of the 2019 versus 2018 results. Factors that relate primarily to a single business segment are discussed in more detail within that business segment's results. Refer to pages 152-155 for a discussion of the Critical Accounting Estimates Used by the Firm that affect the Consolidated Results of Operations.

Revenue

Year ended December 31, (in millions)	2020	2019	2018
Investment banking fees	$ 9,486	$ 7,501	$ 7,550
Principal transactions	18,021	14,018	12,059
Lending- and deposit-related fees[(a)]	6,511	6,626	6,377
Asset management, administration and commissions[(a)]	18,177	16,908	16,793
Investment securities gains/(losses)	802	258	(395)
Mortgage fees and related income	3,091	2,036	1,254
Card income[(b)]	4,435	5,076	4,743
Other income[(c)]	4,457	5,731	5,343
Noninterest revenue	64,980	58,154	53,724
Net interest income	54,563	57,245	55,059
Total net revenue	$ 119,543	$ 115,399	$ 108,783

(a) In the first quarter of 2020, the Firm reclassified certain fees from asset management, administration and commissions to lending- and deposit-related fees. Prior-period amounts have been revised to conform with the current presentation.
(b) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.
(c) Included operating lease income of $5.5 billion for each of the years ended December 31, 2020 and 2019, and $4.5 billion for the year ended December 31, 2018.

2020 compared with 2019

Investment banking fees increased, driven by CIB, reflecting:

- higher equity underwriting fees predominantly in follow-on offerings and convertible securities markets due to increased industry-wide fees
- higher debt underwriting fees in investment-grade and high-yield bonds driven by increased industry-wide fees and wallet share gains. The increased activity resulted in part from clients seeking liquidity in the first half of the year as a result of the COVID-19 pandemic.

Refer to CIB segment results on pages 71–76 and Note 6 for additional information.

Principal transactions revenue increased, predominantly in CIB, reflecting higher revenue in Fixed Income Markets, driven by strong performance in Currencies & Emerging Markets, Rates, and Credit.

The increase in principal transactions revenue also reflected higher net valuations on several legacy equity investments in Corporate, compared with net losses in the prior year.

Principal transactions revenue in CIB may in certain cases have offsets across other revenue lines, including net interest income. The Firm assesses the performance of its CIB Markets business on a total revenue basis.

Refer to CIB and Corporate segment results on pages 71–76 and pages 83–84, respectively, and Note 6 for additional information.

Lending- and deposit-related fees decreased as a result of lower deposit-related fees in CCB, reflecting lower transaction activity and the impact of fee refunds related to the COVID-19 pandemic, predominantly offset by higher cash management fees in CIB and CB, as well as higher lending-related fees, particularly loan commitment fees in CIB.

Refer to CCB, CIB and CB segment results on pages 67–70, pages 71–76 and pages 77–79, respectively, and Note 6 for additional information.

Asset management, administration and commissions revenue increased driven by:

- higher asset management fees in AWM as a result of net inflows into liquidity and long term products, and higher performance fees; and in CCB related to a higher level of investment assets
- higher brokerage commissions in CIB and AWM on higher client-driven volume,

partially offset by

- lower volume of annuity sales in CCB.

Refer to CCB, CIB and AWM segment results on pages 67–70, pages 71–76 and pages 80–82, respectively, and Note 6 for additional information.

Investment securities gains/(losses) increased due to the repositioning of the investment securities portfolio, including sales of U.S. GSE and government agency mortgage-backed securities, particularly in the first and third quarters of 2020. Refer to Corporate segment results on pages 83–84 and Note 10 for additional information.

Mortgage fees and related income increased due to higher net mortgage production revenue reflecting higher mortgage production volumes and margins; the prior year included gains on sales of certain loans.

Refer to CCB segment results on pages 67–70, Note 6 and 15 for further information.

Card income decreased due to:

- lower net interchange income reflecting lower credit card sales volumes and debit card transactions as a result of the impact of the COVID-19 pandemic, largely offset by lower acquisition costs and higher annual fees in CCB, and
- lower merchant processing fees in CIB predominantly driven by a reporting reclassification of certain expenses to be a reduction of revenue in Merchant Services. Refer to CCB and CIB segment results on pages 67–70 and pages 71–76, respectively, and Note 6 for further information.

Other income decreased reflecting:

- Increased amortization on higher levels of alternative energy investments in CIB. The increased amortization was more than offset by lower income tax expense from the associated tax credits
- lower net valuation gains on certain investments in AWM
- net losses on certain equity investments in CIB, compared with net gains in the prior year
- higher costs associated with using forward contracts to hedge certain non-U.S. dollar-denominated net investment exposures, and
- higher losses related to the early termination of certain of the Firm's long-term debt in Treasury and CIO,

partially offset by

- a net increase from a gain on an equity investment.

Net interest income decreased due to the impact of lower rates, predominantly offset by higher net interest income in CIB Markets, as well as balance sheet growth.

The Firm's average interest-earning assets were $2.8 trillion, up $434 billion, and the yield was 2.34%, down 127 basis points ("bps"), primarily due to lower rates. The net yield on these assets, on an FTE basis, was 1.98%, a decrease of 48 bps. The net yield excluding CIB Markets was 2.30%, down 97 bps.

Net yield excluding CIB Markets is a non-GAAP financial measure. Refer to the Consolidated average balance sheets, interest and rates schedule on pages 300-304 for further details; and the Explanation and Reconciliation of the Firm's Use of Non-GAAP Financial Measures on pages 62–64 for a further discussion of Net interest yield excluding CIB Markets.

Provision for credit losses

Year ended December 31, (in millions)	2020	2019	2018
Consumer, excluding credit card	$ 1,016	$ (378)	$ (119)
Credit card	10,886	5,348	4,818
Total consumer	11,902	4,970	4,699
Wholesale	5,510	615	172
Investment securities	68	NA	NA
Total provision for credit losses	$ 17,480	$ 5,585	$ 4,871

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. In conjunction with the adoption of CECL, the Firm reclassified risk-rated loans and lending-related commitments from the consumer, excluding credit card portfolio segment to the wholesale portfolio segment, to align with the methodology applied when determining the allowance. Prior-period amounts have been revised to conform with the current presentation. Refer to Note 1 for further information.

2020 compared with 2019

The **provision for credit losses** increased in consumer and wholesale primarily driven by the deterioration and uncertainty in the macroeconomic environment, in particular in the first half of 2020, as a result of the impact of the COVID-19 pandemic.

The increase in **consumer** reflected:

- net additions of $7.4 billion to the allowance for credit losses, consisting of $6.6 billion for Card, $520 million for Auto, $252 million for Business Banking,

partially offset by

- lower net charge-offs largely in Card, reflecting lower charge-offs and higher recoveries, primarily benefiting from payment assistance and government stimulus.

The prior year included a $244 million net reduction in the allowance for credit losses.

The increase in **wholesale** reflected a net addition of $4.7 billion to the allowance for credit losses across the LOBs, impacting multiple industries.

The **investment securities** provision for credit losses relates to the HTM portfolio, which became subject to the CECL accounting guidance beginning on January 1, 2020.

Refer to the segment discussions of CCB on pages 67–70, CIB on pages 71–76, CB on pages 77–79, AWM on pages 80–82, the Allowance for Credit Losses on pages 132-133, and Notes 1, 10 and 13 for further discussion of the credit portfolio and the allowance for credit losses.

Noninterest expense

Year ended December 31, (in millions)	2020	2019	2018
Compensation expense	**$ 34,988**	$ 34,155	$ 33,117
Noncompensation expense:			
Occupancy	**4,449**	4,322	3,952
Technology, communications and equipment	**10,338**	9,821	8,802
Professional and outside services	**8,464**	8,533	8,502
Marketing[(a)]	**2,476**	3,351	3,044
Other[(b)(c)]	**5,941**	5,087	5,731
Total noncompensation expense	**31,668**	31,114	30,031
Total noninterest expense	**$ 66,656**	$ 65,269	$ 63,148

(a) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.
(b) Included Firmwide legal expense of $1.1 billion, $239 million and $72 million for the years ended December 31, 2020, 2019 and 2018, respectively.
(c) Included FDIC-related expense of $717 million, $457 million and $1.2 billion for the years ended December 31, 2020, 2019 and 2018, respectively.

2020 compared with 2019

Compensation expense increased driven by higher volume- and revenue-related expense, predominantly in CIB and CCB, as well as the impact of investments in the businesses.

Noncompensation expense increased as a result of:

- higher legal expense predominantly in CIB and AWM
- higher volume-related expense, in particular brokerage expense in CIB and depreciation from growth in auto lease assets in CCB
- higher investments in the businesses, including technology and real estate,
- an impairment on a legacy investment in Corporate, and
- higher FDIC-related expense,

partially offset by

- lower marketing expense as a result of lower investments in marketing campaigns and lower travel-related benefits in CCB, and
- lower structural expense, including lower travel and entertainment across the businesses, and payment processing costs, partially offset by higher contributions to the Firm's Foundation.

Income tax expense

Year ended December 31, (in millions, except rate)	2020	2019	2018
Income before income tax expense	**$35,407**	$44,545	$40,764
Income tax expense	**6,276**	8,114	8,290
Effective tax rate	**17.7 %**	18.2 %	20.3 %

2020 compared with 2019

The **effective tax rate** decreased, with the current year rate reflecting the impact of a lower level of pre-tax income and changes in the mix of income and expenses subject to U.S. federal, and state and local taxes, as well as other tax adjustments. The prior year included the effect of $1.1 billion of tax benefits related to the resolution of certain tax audits. Refer to Note 25 for further information.

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. Refer to Note 1 for further information.

Consolidated balance sheets analysis

The following is a discussion of the significant changes between December 31, 2020 and 2019.

Selected Consolidated balance sheets data

December 31, (in millions)	2020	2019	Change
Assets			
Cash and due from banks	$ **24,874**	$ 21,704	15 %
Deposits with banks	**502,735**	241,927	108
Federal funds sold and securities purchased under resale agreements	**296,284**	249,157	19
Securities borrowed	**160,635**	139,758	15
Trading assets[(a)]	**503,126**	369,687	36
Available-for-sale securities	**388,178**	350,699	11
Held-to-maturity securities, net of allowance for credit losses	**201,821**	47,540	325
Investment securities, net of allowance for credit losses	**589,999**	398,239	48
Loans[(a)]	**1,012,853**	997,620	2
Allowance for loan losses	**(28,328)**	(13,123)	116
Loans, net of allowance for loan losses	**984,525**	984,497	–
Accrued interest and accounts receivable	**90,503**	72,861	24
Premises and equipment	**27,109**	25,813	5
Goodwill, MSRs and other intangible assets	**53,428**	53,341	–
Other assets[(a)]	**152,853**	130,395	17
Total assets	$ **3,386,071**	$ 2,687,379	26 %

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.

Cash and due from banks and deposits with banks increased primarily as a result of significant deposit inflows, which also funded asset growth across the Firm, including investment securities and securities purchased under resale agreements. Deposits with banks reflect the Firm's placements of its excess cash with various central banks, including the Federal Reserve Banks.

Federal funds sold and securities purchased under resale agreements increased as a result of higher deployment of cash in Treasury and CIO, as well as the impact of client activity and higher demand for securities to cover short positions in CIB. Refer to Liquidity Risk Management on pages 102–108 and Note 11 for additional information.

Securities borrowed increased driven by client-driven activities in CIB. Refer to Liquidity Risk Management on pages 102–108 and Note 11 for additional information.

Trading assets remained elevated at the end of 2020, due to stronger client-driven market-making activities in debt and equity instruments and higher derivative receivables as a result of market movements in CIB Markets. Refer to Notes 2 and 5 for additional information.

Investment securities increased, reflecting net purchases of U.S. Treasuries and U.S. GSE and government agency MBS in the available-for-sale ("AFS") portfolio, driven by interest rate risk management activities and cash deployment. AFS securities of $164 billion were transferred to the held-to-maturity ("HTM") portfolio, resulting in a decrease in AFS and a comparable increase in HTM securities. The transfers were executed for capital management purposes. Refer to Corporate segment results on pages 83–84, Investment Portfolio Risk Management on page 134 and Notes 2 and 10 for additional information on investment securities.

Loans increased, reflecting:

- growth in wholesale loans and mortgages in AWM and the impact of PPP loans in CBB and CB, as well as higher wholesale loans related to client-driven activities in CIB Markets

largely offset by

- lower loans in Home Lending primarily due to net paydowns; and lower loans in Card due to the decline in sales volumes that began in March as a result of the impact of the COVID-19 pandemic.

The allowance for loan losses increased primarily reflecting the deterioration and uncertainty in the macroeconomic environment, in particular in the first half of 2020, as a result of the impact of the COVID-19 pandemic, consisting of:

- a net $7.4 billion addition in consumer, predominantly in the credit card portfolio, and
- a net $3.6 billion addition in wholesale, across the LOBs, impacting multiple industries.

The adoption of CECL on January 1, 2020, resulted in a $4.2 billion addition to the allowance for loan losses.

There were also additions to the allowance for lending-related commitments, which is included in other liabilities on the consolidated balance sheets, of $1.1 billion related to the impact of the COVID-19 pandemic, and $98 million related to the adoption of CECL. Total additions to the allowance for credit losses were $12.1 billion related to COVID-19, and $4.3 billion related to CECL, as of December 31, 2020.

Refer to Credit and Investment Risk Management on pages 110–134, and Notes 1, 2, 3, 12 and 13 for further discussion of loans and the allowance for loan losses.

Accrued interest and accounts receivable increased driven by higher client receivables related to client-driven activities in CIB prime brokerage.

Refer to Note 16 and 18 for additional information on **Premises and equipment**.

Goodwill, MSRs and other intangibles was flat as the increase in goodwill related to the acquisitions of cxLoyalty and 55ip was offset by lower MSRs as a result of faster prepayment speeds on lower rates, and the realization of expected cash flows, partially offset by net additions to the MSRs. Refer to Note 15 for additional information.

Other assets increased reflecting higher cash collateral placed with central counterparties in CIB.

Selected Consolidated balance sheets data

December 31, (in millions)	2020	2019	Change
Liabilities			
Deposits	$ **2,144,257**	$ 1,562,431	37
Federal funds purchased and securities loaned or sold under repurchase agreements	**215,209**	183,675	17
Short-term borrowings	**45,208**	40,920	10
Trading liabilities	**170,181**	119,277	43
Accounts payable and other liabilities	**232,599**	210,407	11
Beneficial interests issued by consolidated variable interest entities ("VIEs")	**17,578**	17,841	(1)
Long-term debt	**281,685**	291,498	(3)
Total liabilities	**3,106,717**	2,426,049	28
Stockholders' equity	**279,354**	261,330	7
Total liabilities and stockholders' equity	$ **3,386,071**	$ 2,687,379	26 %

Deposits increased reflecting significant inflows across the LOBs primarily driven by the impact of the COVID-19 pandemic and the related effect of certain government actions;

- in the wholesale businesses, while the inflows principally occurred in March as clients sought to remain liquid as a result of market conditions, balances continued to increase through the end of 2020, and
- in CCB, the increase was driven by lower spending and higher cash balances across both consumer and small business customers, as well as growth from existing and new accounts.

Refer to the Liquidity Risk Management discussion on pages 102–108; and Notes 2 and 17 for more information.

Federal funds purchased and securities loaned or sold under repurchase agreements increased reflecting:

- higher secured financing of AFS investment securities in Treasury and CIO, as well as trading assets in CIB,

partially offset by

- a decline in client-driven market-making activities in CIB, including the Firm's non-participation in the Federal Reserve's open market operations. Refer to the Liquidity Risk Management discussion on pages 102–108 and Note 11 for additional information.

Short-term borrowings increased reflecting higher financing of CIB prime brokerage activities. Refer to pages 102–108 for information on changes in Liquidity Risk Management.

Trading liabilities increased reflecting client-driven market-making activities, which resulted in higher levels of short positions in debt and equity instruments and higher derivative payables as a result of market movements in CIB Markets. Refer to Notes 2 and 5 for additional information.

Accounts payable and other liabilities increased reflecting higher client payables related to client-driven activities in CIB Markets. Refer to Note 19 for additional information.

Refer to Off-Balance Sheet Arrangements on pages 60-61 and Note 14 and 28 for information on **Beneficial interests issued by consolidated VIEs**.

Long-term debt decreased as a result of maturities of FHLB advances; net maturities of senior debt, which included the early termination of certain of the Firm's debt; partially offset by an issuance of subordinated debt, and higher fair value hedge accounting adjustments related to lower interest rates. Refer to Liquidity Risk Management on pages 102–108 and Note 20 for additional information.

Stockholders' equity increased reflecting the combined impact of net income, capital actions, the adoption of CECL and an increase in accumulated other comprehensive income ("AOCI"). The increase in AOCI was driven by net unrealized gains on AFS securities, and higher valuation of interest rate cash flow hedges. Refer to page 165 for information on changes in stockholders' equity, and Capital actions on page 99, Note 24 for additional information on AOCI.

Consolidated cash flows analysis

The following is a discussion of cash flow activities during the years ended December 31, 2020 and 2019. Refer to Consolidated cash flows analysis on page 54 of the Firm's 2019 Form 10-K for a discussion of the 2018 activities.

	Year ended December 31,		
(in millions)	**2020**	2019	2018
Net cash provided by/(used in)			
Operating activities[a]	**$ (79,910)**	$ 4,092	$ 15,614
Investing activities[a]	**(261,912)**	(52,059)	(199,420)
Financing activities	**596,645**	32,987	34,158
Effect of exchange rate changes on cash	**9,155**	(182)	(2,863)
Net increase/(decrease) in cash and due from banks and deposits with banks	**$ 263,978**	$ (15,162)	$(152,511)

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.

Operating activities

JPMorgan Chase's operating assets and liabilities primarily support the Firm's lending and capital markets activities. These assets and liabilities can vary significantly in the normal course of business due to the amount and timing of cash flows, which are affected by client-driven and risk management activities and market conditions. The Firm believes that cash flows from operations, available cash and other liquidity sources, and its capacity to generate cash through secured and unsecured sources, are sufficient to meet its operating liquidity needs.

- In 2020, cash used primarily reflected higher trading assets, other assets, and securities borrowed, partially offset by higher trading liabilities and net income excluding noncash adjustments.
- In 2019, cash provided primarily reflected net income excluding noncash adjustments, lower trading assets, and net proceeds of sales, securitizations, and paydowns of loans held-for-sale, partially offset by higher securities borrowed, an increase in other assets and a decrease in trading liabilities.

Investing activities

The Firm's investing activities predominantly include originating held-for-investment loans and investing in the investment securities portfolio, and other short-term instruments.

- In 2020, cash used primarily reflected net purchases of investment securities, higher net originations of loans, and higher securities purchased under resale agreements.
- In 2019, cash used reflected net purchases of investment securities, partially offset by lower securities purchased under resale agreements, and net proceeds from sales and securitizations of loans held-for-investment.

Financing activities

The Firm's financing activities include acquiring customer deposits and issuing long-term debt, as well as preferred stock.

- In 2020, cash provided reflected higher deposits and an increase in securities loaned or sold under repurchase agreements, partially offset by net payments of long-term borrowings.
- In 2019, cash provided reflected higher deposits, partially offset by a decrease in short-term borrowings and net payments of long-term borrowings.
- For both periods, cash was used for repurchases of common stock and cash dividends on common and preferred stock. On March 15, 2020, in response to the economic disruptions caused by the COVID-19 pandemic, the Firm temporarily suspended repurchases of its common stock. Subsequently, the Federal Reserve directed all large banks, including the Firm, to discontinue net share repurchases through the end of 2020.

* * *

Refer to Consolidated Balance Sheets Analysis on pages 57-58, Capital Risk Management on pages 91-101, and Liquidity Risk Management on pages 102–108 for a further discussion of the activities affecting the Firm's cash flows.

OFF-BALANCE SHEET ARRANGEMENTS AND CONTRACTUAL CASH OBLIGATIONS

In the normal course of business, the Firm enters into various off-balance sheet arrangements and contractual obligations that may require future cash payments. Certain obligations are recognized on-balance sheet, while others are disclosed as off-balance sheet under accounting principles generally accepted in the U.S. ("U.S. GAAP").

Special-purpose entities

The Firm has several types of off–balance sheet arrangements, including through nonconsolidated special-purpose entities ("SPEs"), which are a type of VIE, and through lending-related financial instruments (e.g., commitments and guarantees).

The Firm holds capital, as appropriate, against all SPE-related transactions and related exposures, such as derivative contracts and lending-related commitments and guarantees.

The Firm has no commitments to issue its own stock to support any SPE transaction, and its policies require that transactions with SPEs be conducted at arm's length and reflect market pricing. Consistent with this policy, no JPMorgan Chase employee is permitted to invest in SPEs with which the Firm is involved where such investment would violate the Firm's Code of Conduct.

The table below provides an index of where in this 2020 Form 10-K discussions of the Firm's various off-balance sheet arrangements can be found. Refer to Note 1 for additional information about the Firm's consolidation policies.

Type of off-balance sheet arrangement	Location of disclosure	Page references
Special-purpose entities: variable interests and other obligations, including contingent obligations, arising from variable interests in nonconsolidated VIEs	Refer to Note 14	253-260
Off-balance sheet lending-related financial instruments, guarantees, and other commitments	Refer to Note 28	283-288

Contractual cash obligations

The accompanying table summarizes, by remaining maturity, JPMorgan Chase's significant contractual cash obligations at December 31, 2020. The contractual cash obligations included in the table below reflect the minimum contractual obligation under legally enforceable contracts with terms that are both fixed and determinable. Excluded from the table are certain liabilities with variable cash flows and/or no obligation to return a stated amount of principal at maturity.

The carrying amount of on-balance sheet obligations on the Consolidated balance sheets may differ from the minimum contractual amount of the obligations reported below. Refer to Note 28 for a discussion of mortgage repurchase liabilities and other obligations.

Contractual cash obligations

By remaining maturity at December 31, (in millions)	2020					2019
	2021	2022-2023	2024-2025	After 2025	**Total**	Total
On-balance sheet obligations						
Deposits[a]	**$ 2,134,256**	**$ 4,321**	**$ 2,931**	**$ 1,637**	**$ 2,143,145**	$ 1,558,040
Federal funds purchased and securities loaned or sold under repurchase agreements	**214,881**	**118**	**9**	**189**	**215,197**	183,675
Short-term borrowings[a]	**28,514**	**—**	**—**	**—**	**28,514**	35,107
Beneficial interests issued by consolidated VIEs	**14,976**	**2,400**	**—**	**223**	**17,599**	17,874
Long-term debt[a]	**22,461**	**42,084**	**42,180**	**123,477**	**230,202**	250,415
Operating leases[b]	**1,606**	**2,705**	**2,070**	**3,602**	**9,983**	10,090
Other[c]	**8,694**	**2,237**	**2,008**	**2,592**	**15,531**	15,568
Total on-balance sheet obligations	**2,425,388**	**53,865**	**49,198**	**131,720**	**2,660,171**	2,070,769
Off-balance sheet obligations						
Unsettled resale and securities borrowed agreements[d]	**95,084**	**1,764**	**—**	**—**	**96,848**	117,951
Contractual interest payments[e]	**6,071**	**10,450**	**8,128**	**29,719**	**54,368**	54,681
Equity investment commitments	**286**	**—**	**—**	**—**	**286**	539
Contractual purchases and capital expenditures	**1,968**	**942**	**225**	**198**	**3,333**	2,929
Obligations under co-brand programs	**333**	**530**	**240**	**79**	**1,182**	1,548
Total off-balance sheet obligations	**103,742**	**13,686**	**8,593**	**29,996**	**156,017**	177,648
Total contractual cash obligations	**$ 2,529,130**	**$ 67,551**	**$ 57,791**	**$ 161,716**	**$ 2,816,188**	$ 2,248,417

(a) Excludes structured notes on which the Firm is not obligated to return a stated amount of principal at the maturity of the notes, but is obligated to return an amount based on the performance of the structured notes.
(b) Includes noncancelable operating leases for premises and equipment used primarily for business purposes. Excludes the benefit of noncancelable sublease rentals of $593 million and $846 million at December 31, 2020 and 2019, respectively. Refer to Note 18 for further information on operating leases.
(c) Primarily includes dividends declared on preferred and common stock, deferred annuity contracts, pension and other postretirement employee benefit obligations, insurance liabilities and income taxes payable associated with the deemed repatriation under the TCJA.
(d) Refer to unsettled resale and securities borrowed agreements in Note 28 for further information.
(e) Includes accrued interest and future contractual interest obligations. Excludes interest related to structured notes for which the Firm's payment obligation is based on the performance of certain benchmarks.

EXPLANATION AND RECONCILIATION OF THE FIRM'S USE OF NON-GAAP FINANCIAL MEASURES

Non-GAAP financial measures

The Firm prepares its Consolidated Financial Statements in accordance with U.S. GAAP; these financial statements appear on pages 162-166. That presentation, which is referred to as "reported" basis, provides the reader with an understanding of the Firm's results that can be tracked consistently from year-to-year and enables a comparison of the Firm's performance with the U.S. GAAP financial statements of other companies.

In addition to analyzing the Firm's results on a reported basis, management reviews Firmwide results, including the overhead ratio, on a "managed" basis; these Firmwide managed basis results are non-GAAP financial measures. The Firm also reviews the results of the LOBs on a managed basis. The Firm's definition of managed basis starts, in each case, with the reported U.S. GAAP results and includes certain reclassifications to present total net revenue for the Firm (and each of the reportable business segments) on an FTE basis. Accordingly, revenue from investments that receive tax credits and tax-exempt securities is presented in the managed results on a basis comparable to taxable investments and securities. These financial measures allow management to assess the comparability of revenue from year-to-year arising from both taxable and tax-exempt sources. The corresponding income tax impact related to tax-exempt items is recorded within income tax expense. These adjustments have no impact on net income as reported by the Firm as a whole or by the LOBs.

Management also uses certain non-GAAP financial measures at the Firm and business-segment level, because these other non-GAAP financial measures provide information to investors about the underlying operational performance and trends of the Firm or of the particular business segment, as the case may be, and, therefore, facilitate a comparison of the Firm or the business segment with the performance of its relevant competitors. Refer to Business Segment Results on pages 65–84 for additional information on these non-GAAP measures. Non-GAAP financial measures used by the Firm may not be comparable to similarly named non-GAAP financial measures used by other companies.

The following summary table provides a reconciliation from the Firm's reported U.S. GAAP results to managed basis.

	2020			2019			2018		
Year ended December 31, (in millions, except ratios)	Reported	Fully taxable-equivalent adjustments[(b)]	Managed basis	Reported	Fully taxable-equivalent adjustments[(b)]	Managed basis	Reported	Fully taxable-equivalent adjustments[(b)]	Managed basis
Other income	**$ 4,457**	**$ 2,968**	**$ 7,425**	$ 5,731	$ 2,534	$ 8,265	$ 5,343	$ 1,877	$ 7,220
Total noninterest revenue[(a)]	**64,980**	**2,968**	**67,948**	58,154	2,534	60,688	53,724	1,877	55,601
Net interest income	**54,563**	**418**	**54,981**	57,245	531	57,776	55,059	628	55,687
Total net revenue	**119,543**	**3,386**	**122,929**	115,399	3,065	118,464	108,783	2,505	111,288
Total noninterest expense[(a)]	**66,656**	**NA**	**66,656**	65,269	NA	65,269	63,148	NA	63,148
Pre-provision profit	**52,887**	**3,386**	**56,273**	50,130	3,065	53,195	45,635	2,505	48,140
Provision for credit losses	**17,480**	**NA**	**17,480**	5,585	NA	5,585	4,871	NA	4,871
Income before income tax expense	**35,407**	**3,386**	**38,793**	44,545	3,065	47,610	40,764	2,505	43,269
Income tax expense	**6,276**	**3,386**	**9,662**	8,114	3,065	11,179	8,290	2,505	10,795
Net income	**$ 29,131**	**NA**	**$ 29,131**	$ 36,431	NA	$ 36,431	$ 32,474	NA	$ 32,474
Overhead ratio	**56 %**	**NM**	**54 %**	57 %	NM	55 %	58 %	NM	57 %

(a) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.

(b) Predominantly recognized in CIB, CB and Corporate.

Net interest income and net yield excluding CIB Markets

In addition to reviewing net interest income and the net yield on a managed basis, management also reviews these metrics excluding CIB Markets, as shown below; these metrics, which exclude CIB Markets, are non-GAAP financial measures. Management reviews these metrics to assess the performance of the Firm's lending, investing (including asset-liability management) and deposit-raising activities. The resulting metrics that exclude CIB Markets are referred to as non-markets-related net interest income and net yield. CIB Markets consists of Fixed Income Markets and Equity Markets. Management believes that disclosure of non-markets-related net interest income and net yield provides investors and analysts with other measures by which to analyze the non-markets-related business trends of the Firm and provides a comparable measure to other financial institutions that are primarily focused on lending, investing and deposit-raising activities.

Year ended December 31, (in millions, except rates)	2020	2019	2018
Net interest income – reported	**$ 54,563**	$ 57,245	$ 55,059
Fully taxable-equivalent adjustments	**418**	531	628
Net interest income – managed basis[a]	**$ 54,981**	$ 57,776	$ 55,687
Less: CIB Markets net interest income[b]	**8,374**	3,120	3,087
Net interest income excluding CIB Markets[a]	**$ 46,607**	$ 54,656	$ 52,600
Average interest-earning assets[c]	**$2,779,710**	$2,345,279	$2,212,657
Less: Average CIB Markets interest-earning assets[b][c]	**751,131**	672,417	593,104
Average interest-earning assets excluding CIB Markets	**$2,028,579**	$1,672,862	$1,619,553
Net yield on average interest-earning assets – managed basis	**1.98 %**	2.46 %	2.52 %
Net yield on average CIB Markets interest-earning assets[b]	**1.11**	0.46	0.52
Net yield on average interest-earning assets excluding CIB Markets	**2.30 %**	3.27 %	3.25 %

(a) Interest includes the effect of related hedges. Taxable-equivalent amounts are used where applicable.
(b) Refer to pages 74-75 for further information on CIB Markets.
(c) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.

Calculation of certain U.S. GAAP and non-GAAP financial measures

Certain U.S. GAAP and non-GAAP financial measures are calculated as follows:

Book value per share ("BVPS")
Common stockholders' equity at period-end /
Common shares at period-end

Overhead ratio
Total noninterest expense / Total net revenue

Pre-provision profit
Total net revenue – Total noninterest expense

Return on assets ("ROA")
Reported net income / Total average assets

Return on common equity ("ROE")
Net income* / Average common stockholders' equity

Return on tangible common equity ("ROTCE")
Net income* / Average tangible common equity

Tangible book value per share ("TBVPS")
Tangible common equity at period-end / Common shares at period-end

* Represents net income applicable to common equity

In addition, the Firm reviews other non-GAAP financial measures which include:

- Adjusted expense, which is noninterest expense excluding Firmwide legal expense
- Allowance for loan losses to period-end loans retained excluding trade finance and conduits
- Pre-provision profit, which represents total net revenue less total noninterest expense.

Management believes that these measures help investors understand the effect of these items on reported results and provide an alternate presentation of the Firm's performance.

Tangible common equity, ROTCE and TBVPS

Tangible common equity ("TCE"), ROTCE and TBVPS are each non-GAAP financial measures. TCE represents the Firm's common stockholders' equity (i.e., total stockholders' equity less preferred stock) less goodwill and identifiable intangible assets (other than MSRs), net of related deferred tax liabilities. ROTCE measures the Firm's net income applicable to common equity as a percentage of average TCE. TBVPS represents the Firm's TCE at period-end divided by common shares at period-end. TCE, ROTCE and TBVPS are utilized by the Firm, as well as investors and analysts, in assessing the Firm's use of equity.

The following summary table provides a reconciliation from the Firm's common stockholders' equity to TCE.

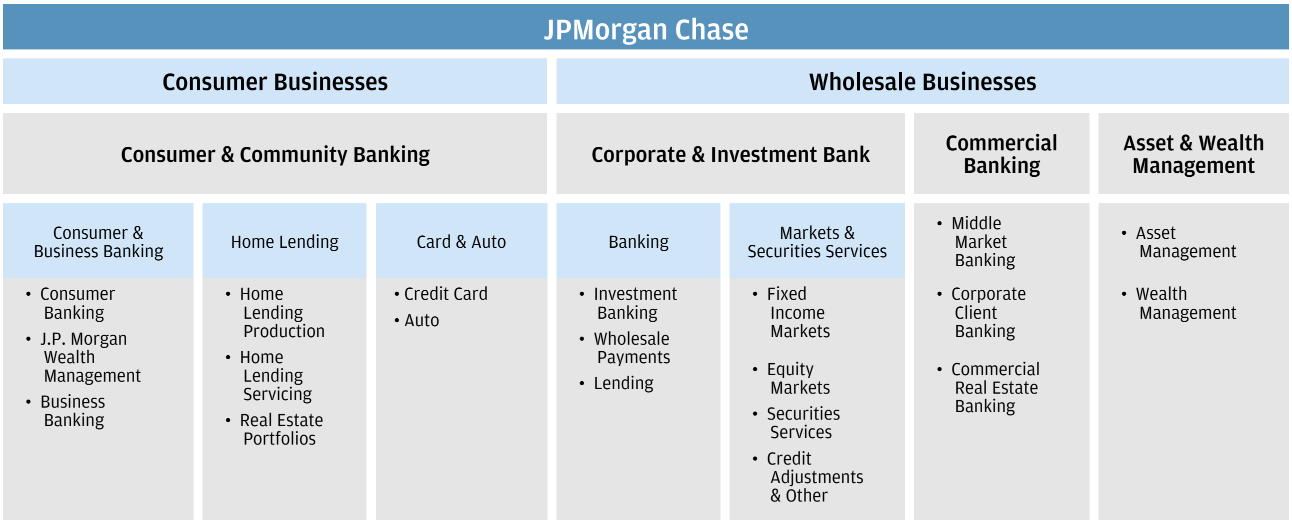
	Period-end		Average		
			Year ended December 31,		
(in millions, except per share and ratio data)	**Dec 31, 2020**	Dec 31, 2019	**2020**	2019	2018
Common stockholders' equity	**$ 249,291**	$ 234,337	**$ 236,865**	$ 232,907	$ 229,222
Less: Goodwill	**49,248**	47,823	**47,820**	47,620	47,491
Less: Other intangible assets	**904**	819	**781**	789	807
Add: Certain deferred tax liabilities[(a)]	**2,453**	2,381	**2,399**	2,328	2,231
Tangible common equity	**$ 201,592**	$ 188,076	**$ 190,663**	$ 186,826	$ 183,155
Return on tangible common equity	**NA**	NA	**14 %**	19 %	17 %
Tangible book value per share	**$ 66.11**	$ 60.98	**NA**	NA	NA

(a) Represents deferred tax liabilities related to tax-deductible goodwill and to identifiable intangibles created in nontaxable transactions, which are netted against goodwill and other intangibles when calculating TCE.

BUSINESS SEGMENT RESULTS

The Firm is managed on an LOB basis. There are four major reportable business segments – Consumer & Community Banking, Corporate & Investment Bank, Commercial Banking and Asset & Wealth Management. In addition, there is a Corporate segment.

The business segments are determined based on the products and services provided, or the type of customer served, and they reflect the manner in which financial information is currently evaluated by the Firm's Operating Committee. Segment results are presented on a managed basis. Refer to Explanation and Reconciliation of the Firm's use of Non-GAAP Financial Measures, on pages 62–64 for a definition of managed basis.



Business segment changes

In the fourth quarter of 2020, the Firm transferred certain assets, liabilities, revenue, expense and headcount associated with certain wealth management clients from AWM to the J.P. Morgan Wealth Management business unit within CCB. Prior-period amounts have been revised to conform with the current presentation, including the transfer of approximately 1,650 technology and support staff during the second and third quarters of 2020. Ultra-high-net-worth and certain high-net-worth client relationships remained in AWM.

In the first quarter of 2020, the Firm began reporting a Wholesale Payments business unit within CIB following a realignment of the Firm's wholesale payments businesses. The Wholesale Payments business comprises:

- Merchant Services, which was realigned from CCB to CIB
- Treasury Services and Trade Finance in CIB. Trade Finance was previously reported in Lending in CIB.

In connection with the alignment of Wholesale Payments, the assets, liabilities and headcount associated with the Merchant Services business were realigned to CIB from CCB, and the revenue and expenses of the Merchant Services business are reported across CCB, CIB and CB based primarily on client relationships. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Payment processing-only clients are those that only use payment services offered by Merchant Services, and in general do not currently utilize other services offered by the Firm. Prior-period amounts have been revised to reflect this realignment and revised allocation methodology.

Description of business segment reporting methodology

Results of the business segments are intended to present each segment as if it were a stand-alone business. The management reporting process that derives business segment results includes the allocation of certain income and expense items. The Firm also assesses the level of capital required for each LOB on at least an annual basis. The Firm periodically assesses the assumptions, methodologies and reporting classifications used for segment reporting, and further refinements may be implemented in future periods.

Revenue sharing

When business segments join efforts to sell products and services to the Firm's clients, the participating business segments may agree to share revenue from those transactions. Revenue is generally recognized in the segment responsible for the related product or service, with allocations to the other segment(s) involved in the transaction. The segment results reflect these revenue-sharing agreements.

Expense Allocation

Where business segments use services provided by corporate support units, or another business segment, the costs of those services are allocated to the respective business segments. The expense is generally allocated based on the actual cost and use of services provided. In contrast, certain costs and investments related to corporate support units, technology and operations not currently utilized by any LOB, are not allocated to the business segments and are retained in Corporate. Expense retained in Corporate generally includes parent company costs that would not be incurred if the segments were stand-alone businesses; and other items not aligned with a particular business segment.

Funds transfer pricing
Funds transfer pricing is the process by which the Firm allocates interest income and expense to each business segment and transfers the primary interest rate risk and liquidity risk exposures to Treasury and CIO within Corporate. The funds transfer pricing process considers the interest rate risk, liquidity risk and regulatory requirements on a product-by-product basis within each business segment.

Debt expense and preferred stock dividend allocation
As part of the funds transfer pricing process, almost all of the cost of the credit spread component of outstanding unsecured long-term debt and preferred stock dividends is allocated to the reportable business segments, while the balance of the cost is retained in Corporate. The methodology to allocate the cost of unsecured long-term debt and preferred stock dividends to the business segments is aligned with the Firm's process to allocate capital. The allocated cost of unsecured long-term debt is included in a business segment's net interest income, and net income is reduced by preferred stock dividends to arrive at a business segment's net income applicable to common equity.

Business segment capital allocation
The amount of capital assigned to each business is referred to as equity. As of January 1, 2021, the Firm has changed its line of business capital allocations primarily as a result of changes in exposures for each LOB and an increase in the relative risk weighting toward Standardized RWA. The assumptions and methodologies used to allocate capital are periodically assessed and as a result, the capital allocated to the LOBs may change from time to time.

Refer to Line of business equity on page 98 for additional information on business segment capital allocation.

Segment Results – Managed Basis

The following tables summarize the Firm's results by segment for the periods indicated.

Year ended December 31,	Consumer & Community Banking[a]			Corporate & Investment Bank			Commercial Banking		
(in millions, except ratios)	**2020**	2019	2018	**2020**	2019	2018	**2020**	2019	2018
Total net revenue	**$ 51,268**	$ 55,133	$ 51,271	**$49,284**	$ 39,265	$ 37,382	**$ 9,313**	$ 9,264	$ 9,336
Total noninterest expense	**27,990**	28,276	27,168	**23,538**	22,444	21,876	**3,798**	3,735	3,627
Pre-provision profit/(loss)	**23,278**	26,857	24,103	**25,746**	16,821	15,506	**5,515**	5,529	5,709
Provision for credit losses	**12,312**	4,954	4,754	**2,726**	277	(60)	**2,113**	296	129
Net income/(loss)	**8,217**	16,541	14,707	**17,094**	11,954	11,799	**2,578**	3,958	4,264
Return on equity ("ROE")	**15%**	31%	28%	**20 %**	14%	16%	**11 %**	17%	20%

Year ended December 31,	Asset & Wealth Management			Corporate			Total[a]		
(in millions, except ratios)	**2020**	2019	2018	**2020**	2019	2018	**2020**	2019	2018
Total net revenue	**$14,240**	$ 13,591	$ 13,427	**$ (1,176)**	$ 1,211	$ (128)	**$ 122,929**	$ 118,464	$ 111,288
Total noninterest expense	**9,957**	9,747	9,575	**1,373**	1,067	902	**66,656**	65,269	63,148
Pre-provision profit/(loss)	**4,283**	3,844	3,852	**(2,549)**	144	(1,030)	**56,273**	53,195	48,140
Provision for credit losses	**263**	59	52	**66**	(1)	(4)	**17,480**	5,585	4,871
Net income/(loss)	**2,992**	2,867	2,945	**(1,750)**	1,111	(1,241)	**29,131**	36,431	32,474
Return on equity ("ROE")	**28 %**	26%	32%	**NM**	NM	NM	**12%**	15%	13%

(a) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.

The following sections provide a comparative discussion of the Firm's results by segment as of or for the years ended December 31, 2020 and 2019.

Consumer & Community Banking offers services to consumers and businesses through bank branches, ATMs, digital (including mobile and online) and telephone banking. CCB is organized into Consumer & Business Banking (including Consumer Banking, J.P. Morgan Wealth Management and Business Banking), Home Lending (including Home Lending Production, Home Lending Servicing and Real Estate Portfolios) and Card & Auto. Consumer & Business Banking offers deposit and investment products, payments and services to consumers, and lending, deposit, and cash management and payment solutions to small businesses. Home Lending includes mortgage origination and servicing activities, as well as portfolios consisting of residential mortgages and home equity loans. Card & Auto issues credit cards to consumers and small businesses and originates and services auto loans and leases.

Selected income statement data

Year ended December 31, (in millions, except ratios)	2020	2019	2018
Revenue			
Lending- and deposit-related fees[(a)]	**$ 3,166**	$ 3,938	$ 3,787
Asset management, administration and commissions[(a)]	**2,780**	2,808	2,592
Mortgage fees and related income	**3,079**	2,035	1,252
Card income[(b)]	**3,068**	3,412	3,108
All other income	**5,647**	5,603	4,599
Noninterest revenue	**17,740**	17,796	15,338
Net interest income	**33,528**	37,337	35,933
Total net revenue	**51,268**	55,133	51,271
Provision for credit losses	**12,312**	4,954	4,754
Noninterest expense			
Compensation expense	**11,014**	10,815	10,580
Noncompensation expense[(b)(c)]	**16,976**	17,461	16,588
Total noninterest expense	**27,990**	28,276	27,168
Income before income tax expense	**10,966**	21,903	19,349
Income tax expense	**2,749**	5,362	4,642
Net income	**$ 8,217**	$16,541	$14,707
Revenue by line of business			
Consumer & Business Banking	**$22,955**	$27,376	$25,607
Home Lending	**6,018**	5,179	5,484
Card & Auto[(b)]	**22,295**	22,578	20,180
Mortgage fees and related income details:			
Net production revenue	**2,629**	1,618	268
Net mortgage servicing revenue[(d)]	**450**	417	984
Mortgage fees and related income	**$ 3,079**	$ 2,035	$ 1,252
Financial ratios			
Return on equity	**15 %**	31 %	28 %
Overhead ratio	**55**	51	53

In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Prior-period amounts have been revised to conform with the current presentation.

In the fourth quarter of 2020, the Firm realigned certain wealth management clients from AWM to CCB. Prior-period amounts have been revised to conform with the current presentation, including an increase to net revenue of $725 million and $649 million for the years ended December 31, 2019 and 2018, respectively. Ultra-high-net-worth and certain high-net-worth client relationships remained in AWM.

(a) In the first quarter of 2020, the Firm reclassified certain fees from asset management, administration and commissions to lending- and deposit-related fees. Prior-period amounts have been revised to conform with the current presentation.
(b) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.
(c) Included depreciation expense on leased assets of $4.2 billion, $4.0 billion and $3.4 billion for the years ended December 31, 2020, 2019 and 2018, respectively.
(d) Included MSR risk management results of $(18) million, $(165) million and $(111) million for the years ended December 31, 2020, 2019 and 2018, respectively.

2020 compared with 2019

Net income was $8.2 billion, a decrease of 50%, largely driven by an increase in the provision for credit losses.

Net revenue was $51.3 billion, a decrease of 7%.

Net interest income was $33.5 billion, down 10%, driven by:

- the impact of deposit margin compression in CBB, spread compression and lower loans in Home Lending, predominantly due to paydowns and prior year loan sales, and lower loans in Card due to the decline in sales volume as a result of the COVID-19 pandemic,

partially offset by

- growth in deposits in CBB, and loan margin expansion in Card, the prior year included charges for the unwind of the internal funding from Treasury and CIO associated with the sales of certain mortgage loans.

Noninterest revenue was $17.7 billion, flat, reflecting:

- lower deposit-related fees due to lower transaction activity and the impact of fee refunds related to the COVID-19 pandemic,
- lower card income due to lower net interchange income reflecting lower credit card sales volumes and debit card transactions as a result of the impact of the COVID-19 pandemic, largely offset by lower acquisition costs and higher annual fees, and
- lower asset management, administration and commissions due to a lower volume of annuity sales offset by a higher level of investment assets,

offset by

- higher net mortgage production revenue reflecting higher mortgage production volumes and margins; the prior year included gains on the sales of certain mortgage loans.

Refer to Note 15 for further information regarding changes in the value of the MSR asset and related hedges, and mortgage fees and related income.

Noninterest expense was $28.0 billion, relatively flat, reflecting:

- lower marketing expense as a result of lower investments in marketing campaigns and lower travel-related benefits, and
- lower structural expenses,

offset by

- investments in the business, higher volume-related compensation, and higher depreciation on auto lease assets.

The provision for credit losses was $12.3 billion, an increase of $7.4 billion from the prior year, driven by:

- additions to the allowance for credit losses as a result of the impact of the COVID-19 pandemic, consisting of: $6.6 billion for Card, $649 million for CBB, and $560 million for Auto,

partially offset by

- lower net charge-offs largely in Card, reflecting lower charge-offs and higher recoveries primarily benefiting from payment assistance and government stimulus.

The prior year included a $300 million net reduction in the allowance for credit losses.

Refer to Credit and Investment Risk Management on pages 110–134 and Allowance for Credit Losses on pages 132-133 for further discussions of the credit portfolios and the allowance for credit losses.

Selected metrics

As of or for the year ended December 31, (in millions, except headcount)	2020		2019	2018
Selected balance sheet data (period-end)				
Total assets	**$ 496,705**		$ 541,367	$ 560,177
Loans:				
Consumer & Business Banking	**48,810**	(d)	29,585	28,450
Home Lending[(a)(b)]	**182,121**		213,445	247,721
Card	**144,216**		168,924	156,632
Auto	**66,432**		61,522	63,573
Total loans	**441,579**		473,476	496,376
Deposits	**958,706**		723,418	684,124
Equity	**52,000**		52,000	51,000
Selected balance sheet data (average)				
Total assets	**$ 501,584**		$ 543,127	$ 548,637
Loans:				
Consumer & Business Banking	**43,064**		28,859	27,890
Home Lending[(a)(c)]	**197,148**		230,662	250,373
Card	**146,633**		156,325	145,652
Auto	**61,476**		61,862	64,675
Total loans	**448,321**		477,708	488,590
Deposits	**851,390**		698,378	675,537
Equity	**52,000**		52,000	51,000
Headcount	**122,894**		125,756	127,826

In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Prior-period amounts have been revised to conform with the current presentation, including a decrease to period-end assets of $6.6 billion and $6.2 billion and headcount of 4,022 and 4,092, as of December 31, 2019 and 2018, respectively.

In the fourth quarter of 2020, the Firm realigned certain wealth management clients from AWM to CCB. Prior-period amounts have been revised to conform with the current presentation, including an increase to headcount of 2,641 and 2,400 as of December 31, 2019 and 2018, respectively.

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.
(b) At December 31, 2020, 2019 and 2018, Home Lending loans held-for-sale and loans at fair value were $9.7 billion, $16.6 billion and $7.9 billion, respectively.
(c) Average Home Lending loans held-for sale and loans at fair value were $11.1 billion, $14.1 billion and $9.0 billion, respectively, for the years ended December 31, 2020, 2019 and 2018.
(d) At December 31, 2020 included $19.2 billion of loans in Business Banking under the PPP. Refer to Credit Portfolio on pages 112-113 for a further discussion of the PPP.

Selected metrics

As of or for the year ended December 31, (in millions, except ratio data)	2020		2019	2018
Credit data and quality statistics				
Nonaccrual loans[(a)(b)(c)]	**$5,675**	(f)	$3,027	$3,349
Net charge-offs/(recoveries)				
Consumer & Business Banking	**263**		298	246
Home Lending	**(169)**		(98)	(294)
Card	**4,286**		4,848	4,518
Auto	**123**		206	243
Total net charge-offs/(recoveries)	**$4,503**		$5,254	$4,713
Net charge-off/(recovery) rate				
Consumer & Business Banking	**0.61 %**	(g)	1.03 %	0.88 %
Home Lending	**(0.09)**		(0.05)	(0.12)
Card	**2.93**		3.10	3.10
Auto	**0.20**		0.33	0.38
Total net charge-off/(recovery) rate	**1.03 %**		1.13 %	0.98 %
30+ day delinquency rate				
Home Lending[(d)(e)]	**1.15 %**	(h)	1.58 %	1.63 %
Card	**1.68**	(h)	1.87	1.83
Auto	**0.69**	(h)	0.94	0.93
90+ day delinquency rate - Card	**0.92 %**	(h)	0.95 %	0.92 %
Allowance for loan losses				
Consumer & Business Banking	**$1,372**		$ 750	$ 796
Home Lending	**1,813**		1,890	2,791
Card	**17,800**		5,683	5,184
Auto	**1,042**		465	464
Total allowance for loan losses	**$22,027**		$8,788	$9,235

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. The adoption resulted in a change in the accounting for PCI loans, which are considered purchased credit deteriorated ("PCD") loans under CECL. Refer to Note 1 for further information.

In the fourth quarter of 2020, the Firm realigned certain wealth management clients from AWM to CCB. Prior-period amounts have been revised to conform with the current presentation.

(a) At December 31, 2020, nonaccrual loans included $1.6 billion of PCD loans. Prior to the adoption of CECL, nonaccrual loans excluded PCI loans as the Firm recognized interest income on each pool of PCI loans as each of the pools was performing.
(b) At December 31, 2020, 2019 and 2018, nonaccrual loans excluded mortgage loans 90 or more days past due and insured by U.S. government agencies of $558 million, $963 million and $2.6 billion, respectively. These amounts have been excluded based upon the government guarantee. Prior-period amounts of mortgage loans 90 or more days past due and insured by U.S. government agencies excluded from nonaccrual loans have been revised to conform with the current presentation; refer to footnote (c) for additional information.
(c) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.
(d) At December 31, 2020, the 30+ day delinquency rates included PCD loans. The rates prior to January 1, 2020 were revised to include the impact of PCI loans.
(e) At December 31, 2020, 2019 and 2018, excluded mortgage loans insured by U.S. government agencies of $744 million, $1.7 billion and $4.1 billion, respectively, that are 30 or more days past due. These amounts have been excluded based upon the government guarantee. Prior-period amounts of mortgage loans 30 or more days past due and insured by U.S. government agencies excluded from 30+ day delinquency rate have been revised to conform with the current presentation; refer to footnote (c) for additional information.

(f) Generally excludes loans under payment deferral programs offered in response to the COVID-19 pandemic. Refer to Consumer Credit Portfolio on pages 114-116 for further information on consumer payment assistance activity. Includes loans to customers that have exited COVID-19 payment deferral programs and are 90 or more days past due, predominantly all of which were also at least 150 days past due and therefore considered collateral-dependent. Collateral-dependent loans are charged down to the lower of amortized cost or fair value of the underlying collateral less costs to sell.

(g) At December 31, 2020, included $19.2 billion of loans in Business Banking under the PPP. Given that PPP loans are guaranteed by the SBA, the Firm does not expect to realize material credit losses on these loans. Refer to Credit Portfolio on pages 112-113 for a further discussion of the PPP.

(h) At December 31, 2020, the principal balance of loans in Home Lending, Card and Auto under payment deferral programs offered in response to the COVID-19 pandemic were $9.1 billion, $264 million and $376 million, respectively. Loans that are performing according to their modified terms are generally not considered delinquent. Refer to Consumer Credit Portfolio on pages 114-116 for further information on consumer payment assistance activity.

Selected metrics

As of or for the year ended December 31, (in billions, except ratios and where otherwise noted)	2020	2019	2018
Business Metrics			
CCB households (in millions)	**63.4**	62.6	61.7
Number of branches	**4,908**	4,976	5,036
Active digital customers (in thousands)[(a)]	**55,274**	52,453	49,254
Active mobile customers (in thousands)[(b)]	**40,899**	37,315	33,260
Debit and credit card sales volume	**$1,081.2**	$1,114.4	$1,016.9
Consumer & Business Banking			
Average deposits	**$ 832.5**	$ 683.7	$ 661.7
Deposit margin	**1.58 %**	2.48 %	2.38 %
Business banking origination volume	**$ 26.6** [(f)]	$ 6.6	$ 6.7
Client investment assets	**590.2**	501.4	399.7
Number of client advisors	**4,417**	4,196	3,929
Home Lending			
Mortgage origination volume by channel			
Retail	**$ 72.9**	$ 51.0	$ 38.3
Correspondent	**40.9**	54.2	41.1
Total mortgage origination volume[(c)]	**$ 113.8**	$ 105.2	$ 79.4
Total loans serviced (period-end)	**$ 626.3**	$ 761.4	$ 789.8
Third-party mortgage loans serviced (period-end)	**447.3**	520.8	519.6
MSR carrying value (period-end)	**3.3**	4.7	6.1
Ratio of MSR carrying value (period-end) to third-party mortgage loans serviced (period-end)	**0.74 %**	0.90 %	1.17 %
MSR revenue multiple[(d)]	**2.55x**	2.65x	3.34x
Credit Card			
Credit card sales volume, excluding commercial card	**$ 702.7**	$ 762.8	$ 692.4
New accounts opened (in millions)	**5.4**	$ 7.8	7.8
Net revenue rate[(e)]	**10.92 %**	10.48 %	10.17 %
Auto			
Loan and lease origination volume	**$ 38.4**	$ 34.0	$ 31.8
Average auto operating lease assets	**22.0**	21.6	18.8

In the fourth quarter of 2020, the Firm realigned certain wealth management clients from AWM to CCB. Prior-period amounts have been revised to conform with the current presentation, including an increase to client investment assets of $143.3 billion and $117.3 billion as of December 31, 2019 and 2018, respectively.

(a) Users of all web and/or mobile platforms who have logged in within the past 90 days.
(b) Users of all mobile platforms who have logged in within the past 90 days.
(c) Firmwide mortgage origination volume was $133.4 billion, $115.9 billion and $86.9 billion for the years ended December 31, 2020, 2019 and 2018, respectively.
(d) Represents the ratio of MSR carrying value (period-end) to third-party mortgage loans serviced (period-end) divided by the ratio of loan servicing-related revenue to third-party mortgage loans serviced (average).
(e) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.
(f) Included $21.9 billion of origination volume under the PPP for the year ended December 31, 2020. Refer to Credit Portfolio on pages 112-113 for a further discussion of the PPP.

The Corporate & Investment Bank, which consists of Banking and Markets & Securities Services, offers a broad suite of investment banking, market-making, prime brokerage, and treasury and securities products and services to a global client base of corporations, investors, financial institutions, merchants, government and municipal entities. Banking offers a full range of investment banking products and services in all major capital markets, including advising on corporate strategy and structure, capital-raising in equity and debt markets, as well as loan origination and syndication. Banking also includes Wholesale Payments, which provides payments services enabling clients to manage payments and receipts globally, and cross-border financing. Markets & Securities Services includes Markets, a global market-maker across products, including cash and derivative instruments, which also offers sophisticated risk management solutions, prime brokerage, and research. Markets & Securities Services also includes Securities Services, a leading global custodian which provides custody, fund accounting and administration, and securities lending products principally for asset managers, insurance companies and public and private investment funds.

Selected income statement data

Year ended December 31, (in millions)	2020	2019	2018
Revenue			
Investment banking fees	**$ 9,477**	$ 7,575	$ 7,473
Principal transactions	**17,560**	14,399	12,262
Lending- and deposit-related fees[a]	**2,070**	1,668	1,633
Asset management, administration and commissions[a]	**4,721**	4,400	4,361
All other income	**1,292**	2,018	2,125
Noninterest revenue	**35,120**	30,060	27,854
Net interest income	**14,164**	9,205	9,528
Total net revenue[b]	**49,284**	39,265	37,382
Provision for credit losses	**2,726**	277	(60)
Noninterest expense			
Compensation expense	**11,612**	11,180	10,776
Noncompensation expense	**11,926**	11,264	11,100
Total noninterest expense	**23,538**	22,444	21,876
Income before income tax expense	**23,020**	16,544	15,566
Income tax expense	**5,926**	4,590	3,767
Net income	**$ 17,094**	$ 11,954	$ 11,799

In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Prior-period amounts have been revised to conform with the current presentation.

(a) In the first quarter of 2020, the Firm reclassified certain fees from asset management, administration and commissions to lending- and deposit-related fees. Prior-period amounts have been revised to conform with the current presentation.

(b) Includes tax-equivalent adjustments, predominantly due to income tax credits related to alternative energy investments; income tax credits and amortization of the cost of investments in affordable housing projects; and tax-exempt income from municipal bonds of $2.8 billion, $2.3 billion and $1.7 billion for the years ended December 31, 2020, 2019 and 2018, respectively.

Selected income statement data

Year ended December 31, (in millions, except ratios)	2020	2019	2018
Financial ratios			
Return on equity	**20 %**	14 %	16 %
Overhead ratio	**48**	57	59
Compensation expense as percentage of total net revenue	**24**	28	29
Revenue by business			
Investment Banking	**$ 8,871**	$ 7,215	$ 6,987
Wholesale Payments	**5,560**	5,842	5,930
Lending	**1,146**	1,021	999
Total Banking	**15,577**	14,078	13,916
Fixed Income Markets	**20,878**	14,418	12,706
Equity Markets	**8,605**	6,494	6,888
Securities Services	**4,253**	4,154	4,245
Credit Adjustments & Other[a]	**(29)**	121	(373)
Total Markets & Securities Services	**33,707**	25,187	23,466
Total net revenue	**$49,284**	$39,265	$37,382

In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Prior-period amounts have been revised to conform with the current presentation.

(a) Includes credit valuation adjustments ("CVA") managed centrally within CIB and funding valuation adjustments ("FVA") on derivatives and certain components of fair value option elected liabilities, which are primarily reported in principal transactions revenue. Results are presented net of associated hedging activities and net of CVA and FVA amounts allocated to Fixed Income Markets and Equity Markets. Refer to Notes 2, 3 and 24 for additional information.

2020 compared with 2019

Net income was $17.1 billion, up 43%.

Net revenue was $49.3 billion, up 26%.

Banking revenue was $15.6 billion, up 11%.

- Investment Banking revenue was $8.9 billion, up 23%, driven by higher Investment Banking fees, up 25%, reflecting higher equity and debt underwriting fees. The Firm maintained its #1 ranking for Global Investment Banking fees with overall share gains, according to Dealogic.
  - Equity underwriting fees were $2.8 billion, up 66%, predominantly in follow-on offerings and convertible securities markets due to increased industry-wide fees.
  - Debt underwriting fees were $4.4 billion, up 23%, driven by increased industry-wide fees and wallet share gains in investment grade and high yield bonds. The increased activity resulted in part from clients seeking liquidity in the first half of the year as a result of the COVID-19 pandemic.
  - Advisory fees of $2.4 billion were flat, reflecting an increase in wallet share, despite a decrease in industry-wide fees.
- Wholesale Payments revenue was $5.6 billion, down 5%, driven by deposit margin compression and a reporting reclassification for certain expenses which are now reported as a reduction of revenue in Merchant Services, largely offset by higher deposit balances.
- Lending revenue was $1.1 billion, up 12%, predominantly driven by higher net interest income reflecting higher yields on new loans and higher loan balances, as well as higher loan commitment fees, largely offset by fair value losses on hedges of accrual loans.

Markets & Securities Services revenue was $33.7 billion, up 34%. Markets revenue was $29.5 billion, up 41%.

- Fixed Income Markets revenue was $20.9 billion, up 45%, driven by strong client activity across products primarily in Rates, Credit, Currencies & Emerging Markets, and Securitized Products.
- Equity Markets revenue was $8.6 billion, up 33%, driven by strong client activity across products.
- Securities Services revenue was $4.3 billion, up 2%, driven by deposit balance and fee growth largely offset by deposit margin compression.

The provision for credit losses was $2.7 billion, compared with $277 million in the prior year. The increase was driven by net additions to the allowance for credit losses as a result of the impact of the COVID-19 pandemic across multiple industries.

Noninterest expense was $23.5 billion, up 5%, driven by higher volume- and revenue-related expense and legal expense.

Selected metrics

As of or for the year ended December 31, (in millions, except headcount)	2020	2019	2018
Selected balance sheet data (period-end)			
Assets	**$ 1,097,219**	$ 914,705	$ 909,292
Loans:			
Loans retained[(a)]	**133,296**	121,733	129,389
Loans held-for-sale and loans at fair value[(b)(c)]	**39,588**	34,317	36,407
Total loans	**172,884**	156,050	165,796
Equity	**80,000**	80,000	70,000
Selected balance sheet data (average)			
Assets	**$ 1,122,939**	$ 993,508	$ 930,126
Trading assets-debt and equity instruments[(c)]	**422,237**	376,182	321,280
Trading assets-derivative receivables	**72,065**	48,196	60,552
Loans:			
Loans retained[(a)]	**135,676**	122,371	114,417
Loans held-for-sale and loans at fair value[(b)(c)]	**33,792**	32,884	30,317
Total loans	**169,468**	155,255	144,734
Equity	**80,000**	80,000	70,000
Headcount	**61,733**	60,013	58,572

In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Prior-period amounts have been revised to conform with the current presentation, including an increase to period-end assets of $6.6 billion and $6.2 billion and headcount of 4,022 and 4,092, as of December 31, 2019 and 2018, respectively.

(a) Loans retained includes credit portfolio loans, loans held by consolidated Firm-administered multi-seller conduits, trade finance loans, mortgage-related secured lending, other held-for-investment loans and overdrafts

(b) Loans held-for-sale and loans at fair value primarily reflect lending-related positions originated and purchased in CIB Markets, including loans held for securitization.

(c) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.

Selected metrics

As of or for the year ended December 31, (in millions, except ratios)	2020	2019	2018
Credit data and quality statistics			
Net charge-offs/ (recoveries)	**$ 370**	$ 183	$ 93
Nonperforming assets:			
Nonaccrual loans:			
Nonaccrual loans retained[(a)]	**1,008**	308	443
Nonaccrual loans held-for-sale and loans at fair value[(b)(c)]	**1,662**	644	921
Total nonaccrual loans	**2,670**	952	1,364
Derivative receivables	**56**	30	60
Assets acquired in loan satisfactions	**85**	70	57
Total nonperforming assets	**2,811**	1,052	1,481
Allowance for credit losses:			
Allowance for loan losses	**2,366**	1,202	1,199
Allowance for lending-related commitments	**1,534**	848	754
Total allowance for credit losses	**3,900**	2,050	1,953
Net charge-off/(recovery) rate[(d)]	**0.27 %**	0.15 %	0.08 %
Allowance for loan losses to period-end loans retained	**1.77**	0.99	0.93
Allowance for loan losses to period-end loans retained, excluding trade finance and conduits[(e)]	**2.54**	1.31	1.24
Allowance for loan losses to nonaccrual loans retained[(a)]	**235**	390	271
Nonaccrual loans to total period-end loans[(b)]	**1.54**	0.61	0.82

(a) Allowance for loan losses of $278 million, $110 million and $174 million were held against these nonaccrual loans at December 31, 2020, 2019 and 2018, respectively.

(b) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.

(c) At December 31, 2020, 2019 and 2018, nonaccrual loans excluded mortgage loans 90 or more days past due and insured by U.S. government agencies of $316 million, $127 million and $155 million, respectively. These amounts have been excluded based upon the government guarantee.

(d) Loans held-for-sale and loans at fair value were excluded when calculating the net charge-off/(recovery) rate.

(e) Management uses allowance for loan losses to period-end loans retained, excluding trade finance and conduits, a non-GAAP financial measure, to provide a more meaningful assessment of CIB's allowance coverage ratio.

Investment banking fees

(in millions)		Year ended December 31, 2020		2019		2018
Advisory	**$**	**2,368**	$	2,377	$	2,509
Equity underwriting		**2,758**		1,666		1,684
Debt underwriting[a]		**4,351**		3,532		3,280
Total investment banking fees	**$**	**9,477**	$	7,575	$	7,473

(a) Represents long-term debt and loan syndications.

League table results – wallet share

Year ended December 31,		2020 Rank	2020 Share		2019 Rank	2019 Share		2018 Rank	2018 Share
Based on fees[a]									
M&A[b]									
Global	**#**	**2**	**9.3 %**	#	2	8.9 %	#	2	8.6 %
U.S.		**2**	**9.7**		2	9.2		2	8.8
Equity and equity-related[c]									
Global		**2**	**8.6**		1	9.3		1	9.0
U.S.		**2**	**11.1**		2	13.2		1	12.3
Long-term debt[d]									
Global		**1**	**8.9**		1	7.8		1	7.2
U.S.		**1**	**12.8**		1	12.0		1	11.4
Loan syndications									
Global		**1**	**11.1**		1	10.1		1	10.1
U.S.		**1**	**11.5**		1	12.5		1	12.3
Global investment banking fees[e]	**#**	**1**	**9.2 %**	#	1	8.9 %	#	1	8.6 %

(a) Source: Dealogic as of January 4, 2021. Reflects the ranking of revenue wallet and market share.
(b) Global M&A excludes any withdrawn transactions. U.S. M&A revenue wallet represents wallet from client parents based in the U.S.
(c) Global equity and equity-related ranking includes rights offerings and Chinese A-Shares.
(d) Long-term debt rankings include investment-grade, high-yield, supranationals, sovereigns, agencies, covered bonds, asset-backed securities ("ABS") and mortgage-backed securities ("MBS"); and exclude money market, short-term debt, and U.S. municipal securities.
(e) Global investment banking fees exclude money market, short-term debt and shelf securities.

Markets revenue

The following table summarizes select income statement data for the Markets businesses. Markets consists of Fixed Income Markets and Equity Markets. Markets revenue comprises principal transactions, fees, commissions and other income, as well as net interest income. The Firm assesses its Markets business performance on a total revenue basis, as offsets may occur across revenue line items. For example, securities that generate net interest income may be risk-managed by derivatives that are recorded in principal transactions revenue. Refer to Notes 6 and 7 for a description of the composition of these income statement line items.

Principal transactions reflects revenue on financial instruments and commodities transactions that arise from client-driven market-making activity. Principal transactions revenue includes amounts recognized upon executing new transactions with market participants, as well as "inventory-related revenue", which is revenue recognized from gains and losses on derivatives and other instruments that the Firm has been holding in anticipation of, or in response to, client demand, and changes in the fair value of instruments used by the Firm to actively manage the risk exposure arising from such inventory. Principal transactions revenue recognized upon executing new transactions with market participants is driven by many factors including the level of client activity, the bid-offer spread (which is the difference between the price at which a market participant is willing and able to sell an instrument to the Firm and the price at which another market participant is willing and able to buy it from the Firm, and vice versa), market liquidity and volatility. These factors are interrelated and sensitive to the same factors that drive inventory-related revenue, which include general market conditions, such as interest rates, foreign exchange rates, credit spreads, and equity and commodity prices, as well as other macroeconomic conditions.

For the periods presented below, the predominant source of principal transactions revenue was the amount recognized upon executing new transactions.

Year ended December 31, (in millions, except where otherwise noted)	**2020**			2019			2018		
	Fixed Income Markets	**Equity Markets**	**Total Markets**	Fixed Income Markets	Equity Markets	Total Markets	Fixed Income Markets	Equity Markets	Total Markets
Principal transactions	**$ 11,857**	**$ 6,087**	**$ 17,944**	$ 8,786	$ 5,739	$ 14,525	$ 7,560	$ 5,566	$ 13,126
Lending- and deposit-related fees	**226**	**10**	**236**	198	7	205	197	6	203
Asset management, administration and commissions	**411**	**2,087**	**2,498**	407	1,775	2,182	410	1,794	2,204
All other income	**493**	**(62)**	**431**	872	8	880	952	22	974
Noninterest revenue	**12,987**	**8,122**	**21,109**	10,263	7,529	17,792	9,119	7,388	16,507
Net interest income	**7,891**	**483**	**8,374**	4,155	(1,035)	3,120	3,587	(500)	3,087
Total net revenue	**$ 20,878**	**$ 8,605**	**$ 29,483**	$ 14,418	$ 6,494	$ 20,912	$ 12,706	$ 6,888	$ 19,594
Loss days[(a)]			4			1			5

(a) Loss days represent the number of days for which CIB Markets, which consists of Fixed Income Markets and Equity Markets, posted losses to total net revenue. The loss days determined under this measure differ from the measure used to determine backtesting gains and losses. Daily backtesting gains and losses include positions in the Firm's Risk Management value-at-risk ("VaR") measure and exclude select components of total net revenue, which may more than offset backtesting gains or losses on a particular day. For more information on daily backtesting gains and losses, refer to the VaR discussion on pages 137–139.

Selected metrics

As of or for the year ended December 31, (in millions, except where otherwise noted)	**2020**	2019	2018
Assets under custody ("AUC") by asset class (period-end) (in billions):			
Fixed Income	**$ 15,840**	$ 13,498	$ 12,440
Equity	**11,489**	10,100	8,078
Other[(a)]	**3,651**	3,233	2,699
Total AUC	**$ 30,980**	$ 26,831	$ 23,217
Merchant processing volume (in billions)[(b)]	**$ 1,597.3**	$ 1,511.5	$ 1,366.1
Client deposits and other third party liabilities (average)[(c)]	**$ 610,555**	$ 464,795	$ 434,422

In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. Prior-period amounts have been revised to conform with the current presentation.

(a) Consists of mutual funds, unit investment trusts, currencies, annuities, insurance contracts, options and other contracts.
(b) Represents total merchant processing volume across CIB, CCB and CB.
(c) Client deposits and other third-party liabilities pertain to the Wholesale Payments and Securities Services businesses.

International metrics

As of or for the year ended December 31, (in millions, except where otherwise noted)	2020	2019[c]	2018[c]
Total net revenue[a]			
Europe/Middle East/Africa	**$ 13,872**	$ 11,905	$ 12,422
Asia-Pacific	**7,524**	5,319	5,077
Latin America/Caribbean	**1,931**	1,543	1,473
Total international net revenue	**23,327**	18,767	18,972
North America	**25,957**	20,498	18,410
Total net revenue	**$ 49,284**	$ 39,265	$ 37,382
Loans retained (period-end)[a]			
Europe/Middle East/Africa	**$ 27,659**	$ 26,067	$ 23,648
Asia-Pacific	**12,802**	14,759	17,101
Latin America/Caribbean	**5,425**	6,173	6,515
Total international loans	**45,886**	46,999	47,264
North America	**87,410**	74,734	82,125
Total loans retained	**$ 133,296**	$ 121,733	$ 129,389
Client deposits and other third-party liabilities (average)[b]			
Europe/Middle East/Africa	**$ 211,592**	$ 174,477	$ 162,846
Asia-Pacific	**124,145**	90,364	82,867
Latin America/Caribbean	**37,664**	29,024	26,668
Total international	**$ 373,401**	$ 293,865	$ 272,381
North America	**237,154**	170,930	162,041
Total client deposits and other third-party liabilities	**$ 610,555**	$ 464,795	$ 434,422
AUC (period-end)[b] **(in billions)**			
North America	**$ 20,028**	$ 16,855	$ 14,359
All other regions	**10,952**	9,976	8,858
Total AUC	**$ 30,980**	$ 26,831	$ 23,217

In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Prior-period amounts have been revised to conform with the current presentation.

(a) Total net revenue and loans retained (excluding loans held-for-sale and loans at fair value) are based on the location of the trading desk, booking location, or domicile of the client, as applicable.
(b) Client deposits and other third-party liabilities pertaining to the Wholesale Payments and Securities Services businesses, and AUC, are based on the domicile of the client.
(c) Prior-period amounts have been revised to conform with the current presentation.

Commercial Banking provides comprehensive financial solutions, including lending, wholesale payments, investment banking and asset management products across three primary client segments: Middle Market Banking, Corporate Client Banking and Commercial Real Estate Banking. Other includes amounts not aligned with a primary client segment.

Middle Market Banking covers small and midsized companies, local governments and nonprofit clients.

Corporate Client Banking covers large corporations.

Commercial Real Estate Banking covers investors, developers, and owners of multifamily, office, retail, industrial and affordable housing properties.

Selected income statement data

Year ended December 31, (in millions)	2020	2019	2018
Revenue			
Lending- and deposit-related fees[(a)]	**$ 1,187**	$ 941	$ 896
All other income[(a)]	**1,880**	1,769	1,724
Noninterest revenue	**3,067**	2,710	2,620
Net interest income	**6,246**	6,554	6,716
Total net revenue[(b)]	**9,313**	9,264	9,336
Provision for credit losses	**2,113**	296	129
Noninterest expense			
Compensation expense	**1,854**	1,785	1,694
Noncompensation expense	**1,944**	1,950	1,933
Total noninterest expense	**3,798**	3,735	3,627
Income before income tax expense	**3,402**	5,233	5,580
Income tax expense	**824**	1,275	1,316
Net income	**$ 2,578**	$ 3,958	$ 4,264

In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. In conjunction with this realignment, treasury services product revenue has been renamed wholesale payments. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Prior-period revenue and expense amounts have been revised to conform with the current presentation.

(a) In the first quarter of 2020, the Firm reclassified certain fees from asset management, administration and commissions (which are included in all other income) to lending and deposit-related fees. Prior period amounts have been revised to conform with the current period presentation.

(b) Total net revenue included tax-equivalent adjustments from income tax credits related to equity investments in designated community development entities and in entities established for rehabilitation of historic properties, as well as tax-exempt income related to municipal financing activities of $351 million, $460 million and $444 million for the years ended December 31, 2020, 2019 and 2018, respectively.

2020 compared with 2019

Net income was $2.6 billion, a decrease of 35%, driven by an increase in the provision for credit losses.

Net revenue was $9.3 billion, flat compared to the prior year. Net interest income was $6.2 billion, a decrease of 5%, driven by deposit margin compression, predominantly offset by higher deposit balances and lending revenue. Noninterest revenue was $3.1 billion, an increase of 13%, driven by higher deposit-related fees, particularly cash management fees, higher investment banking revenue, and a gain on a strategic investment. The increase was partially offset by a $56 million markdown of a held-for-sale position and lower card income, primarily due to lower volumes as a result of the COVID-19 pandemic.

Noninterest expense was $3.8 billion, an increase of 2%, driven by higher compensation expense.

The provision for credit losses was $2.1 billion, compared to $296 million in the prior year. The increase was driven by net additions to the allowance for credit losses as a result of the impact of the COVID-19 pandemic across multiple industries.

CB product revenue consists of the following:

Lending includes a variety of financing alternatives, which are primarily provided on a secured basis; collateral includes receivables, inventory, equipment, real estate or other assets. Products include term loans, revolving lines of credit, bridge financing, asset-based structures, leases, and standby letters of credit.

Wholesale payments includes revenue from a broad range of products and services that enable CB clients to manage payments and receipts, as well as invest and manage funds.

Investment banking includes revenue from a range of products providing CB clients with sophisticated capital-raising alternatives, as well as balance sheet and risk management tools through advisory, equity underwriting, and loan syndications. Revenue from Fixed Income and Equity Markets products used by CB clients is also included.

Other product revenue primarily includes tax-equivalent adjustments generated from Community Development Banking activities and certain income derived from principal transactions.

Selected income statement data (continued)

Year ended December 31, (in millions, except ratios)	2020	2019	2018
Revenue by product			
Lending	**$4,396**	$4,057	$4,049
Wholesale payments	**3,715**	4,200	4,351
Investment banking[(a)]	**1,069**	919	852
Other	**133**	88	84
Total Commercial Banking net revenue	**$9,313**	$9,264	$9,336
Investment banking revenue, gross[(b)]	**$3,348**	$2,744	$2,491
Revenue by client segment			
Middle Market Banking	**$3,640**	$3,805	$3,797
Corporate Client Banking	**3,203**	3,119	3,119
Commercial Real Estate Banking	**2,313**	2,169	2,251
Other	**157**	171	169
Total Commercial Banking net revenue	**$9,313**	$9,264	$9,336
Financial ratios			
Return on equity	**11 %**	17 %	20 %
Overhead ratio	**41**	40	39

In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. In conjunction with this realignment, treasury services product revenue has been renamed wholesale payments. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Prior-period revenue and expense amounts have been revised to conform with the current presentation.

(a) Includes CB's share of revenue from investment banking products sold to CB clients through the CIB.

(b) Refer to Business Segment Results page 65 for a discussion of revenue sharing.

Selected metrics

As of or for the year ended December 31, (in millions, except headcount)	2020		2019	2018
Selected balance sheet data (period-end)				
Total assets	**$ 228,932**		$ 220,514	$ 220,229
Loans:				
Loans retained	**207,880**		207,287	204,219
Loans held-for-sale and loans at fair value	**2,245**		1,009	1,978
Total loans	**$ 210,125**		$ 208,296	$ 206,197
Equity	**22,000**		22,000	20,000
Period-end loans by client segment				
Middle Market Banking	**$ 61,115**	(a)	$ 54,188	$ 56,656
Corporate Client Banking	**47,420**		51,165	48,343
Commercial Real Estate Banking	**101,146**		101,951	100,088
Other	**444**		992	1,110
Total Commercial Banking loans	**$ 210,125**	(a)	$ 208,296	$ 206,197
Selected balance sheet data (average)				
Total assets	**$ 233,158**		$ 218,896	$ 218,259
Loans:				
Loans retained	**217,767**		206,837	204,243
Loans held-for-sale and loans at fair value	**1,129**		1,082	1,258
Total loans	**$ 218,896**		$ 207,919	$ 205,501
Client deposits and other third-party liabilities	**237,825**		172,734	170,901
Equity	**22,000**		22,000	20,000
Average loans by client segment				
Middle Market Banking	**$ 61,558**		$ 55,690	$ 57,092
Corporate Client Banking	**54,172**		50,360	47,780
Commercial Real Estate Banking	**102,479**		100,884	99,243
Other	**687**		985	1,386
Total Commercial Banking loans	**$ 218,896**		$ 207,919	$ 205,501
Headcount	**11,675**		11,629	11,042

(a) At December 31, 2020, total loans included $6.6 billion of loans under the PPP, of which $6.4 billion were in Middle Market Banking. Refer to Credit Portfolio on pages 112-113 for a further discussion of the PPP.

Selected metrics

As of or for the year ended December 31, (in millions, except ratios)	2020	2019	2018
Credit data and quality statistics			
Net charge-offs/(recoveries)	**$ 401**	$ 160	$ 53
Nonperforming assets			
Nonaccrual loans:			
Nonaccrual loans retained[a]	**1,286**	498	511
Nonaccrual loans held-for-sale and loans at fair value	**120**	–	–
Total nonaccrual loans	**1,406**	498	511
Assets acquired in loan satisfactions	**24**	25	2
Total nonperforming assets	**1,430**	523	513
Allowance for credit losses:			
Allowance for loan losses	**3,335**	2,780	2,682
Allowance for lending-related commitments	**651**	293	254
Total allowance for credit losses	**3,986**	3,073	2,936
Net charge-off/(recovery) rate[b]	**0.18 %**	0.08 %	0.03 %
Allowance for loan losses to period-end loans retained	**1.60**	1.34	1.31
Allowance for loan losses to nonaccrual loans retained[a]	**259**	558	525
Nonaccrual loans to period-end total loans	**0.67**	0.24	0.25

(a) Allowance for loan losses of $273 million, $114 million and $92 million was held against nonaccrual loans retained at December 31, 2020, 2019 and 2018, respectively.

(b) Loans held-for-sale and loans at fair value were excluded when calculating the net charge-off/(recovery) rate.

ASSET & WEALTH MANAGEMENT

Asset & Wealth Management, with client assets of $3.7 trillion, is a global leader in investment and wealth management.

Asset Management
Offers multi-asset investment management solutions across equities, fixed income, alternatives and money market funds to institutional and retail investors providing for a broad range of clients' investment needs.

Wealth Management
Provides retirement products and services, brokerage, custody, trusts and estates, loans, mortgages, deposits and investment management to high net worth clients.

The majority of AWM's client assets are in actively managed portfolios.

Selected income statement data

Year ended December 31, (in millions, except ratios and headcount)	2020	2019	2018
Revenue			
Asset management, administration and commissions	**$10,610**	$ 9,818	$ 9,808
All other income	**212**	418	244
Noninterest revenue	**10,822**	10,236	10,052
Net interest income	**3,418**	3,355	3,375
Total net revenue	**14,240**	13,591	13,427
Provision for credit losses	**263**	59	52
Noninterest expense			
Compensation expense	**4,959**	5,028	4,888
Noncompensation expense	**4,998**	4,719	4,687
Total noninterest expense	**9,957**	9,747	9,575
Income before income tax expense	**4,020**	3,785	3,800
Income tax expense	**1,028**	918	855
Net income	**$ 2,992**	$ 2,867	$ 2,945
Revenue by line of business			
Asset Management	**$ 7,654**	$ 7,254	$ 7,163
Wealth Management	**6,586**	6,337	6,264
Total net revenue	**$14,240**	$13,591	$13,427
Financial ratios			
Return on common equity	**28 %**	26 %	32 %
Overhead ratio	**70**	72	71
Pre-tax margin ratio:			
Asset Management	**29**	26	26
Wealth Management	**27**	30	30
Asset & Wealth Management	**28**	28	28

In the fourth quarter of 2020, the Firm realigned certain wealth management clients from AWM to CCB. Prior-period amounts have been revised to conform with the current presentation, including a decrease to net revenue of $725 million and $649 million for the years ended December 31, 2019 and 2018, respectively. Effective in the first quarter of 2021, the Wealth Management business was renamed Global Private Bank.

2020 compared with 2019

Net income was $3.0 billion, an increase of 4%.

Net revenue was $14.2 billion, an increase of 5%. Net interest income was $3.4 billion, up 2%, driven by higher deposit and loan balances as well as loan margin expansion, offset by deposit margin compression. Noninterest revenue was $10.8 billion, up 6%, predominantly driven by higher asset management fees as a result of net inflows into liquidity and long term products, higher performance fees and increased brokerage commissions on higher client-driven volume, partially offset by lower net investment valuation gains.

Revenue from Asset Management was $7.7 billion, up 6%, predominantly driven by higher asset management fees as a result of net inflows into liquidity products as well as higher performance fees, partially offset by lower net investment valuation gains.

Revenue from Wealth Management was $6.6 billion, up 4%, predominantly driven by higher deposit and loan balances, increased brokerage commissions and asset management fees, largely offset by deposit margin compression.

The provision for credit losses was $263 million, driven by additions to the allowance for credit losses, predominantly as a result of the impact of the COVID-19 pandemic.

Noninterest expense was $10.0 billion, an increase of 2%, driven by legal expense, volume- and revenue-related expense as well as investments in the business, partially offset by lower structural expense.

AWM's client segments consist of the following:

Private Banking clients include high- and ultra-high-net-worth individuals, families, money managers and business owners.

Institutional clients include both corporate and public institutions, endowments, foundations, nonprofit organizations and governments worldwide.

Retail clients include financial intermediaries and individual investors.

Asset Management has two high-level measures of its overall fund performance.

- **Percentage of mutual fund assets under management in funds rated 4- or 5-star:** Mutual fund rating services rank funds based on their risk-adjusted performance over various periods. A 5-star rating is the best rating and represents the top 10% of industry-wide ranked funds. A 4-star rating represents the next 22.5% of industry-wide ranked funds. A 3-star rating represents the next 35% of industry-wide ranked funds. A 2-star rating represents the next 22.5% of industry-wide ranked funds. A 1-star rating is the worst rating and represents the bottom 10% of industry-wide ranked funds. The "overall Morningstar rating" is derived from a weighted average of the performance associated with a fund's three-, five- and ten-year (if applicable) Morningstar Rating metrics. For U.S. domiciled funds, separate star ratings are given at the individual share class level. The Nomura "star rating" is based on three-year risk-adjusted performance only. Funds with fewer than three years of history are not rated and hence excluded from this analysis. All ratings, the assigned peer categories and the asset values used to derive this analysis are sourced from these fund rating providers mentioned in footnote (a). The data providers re-denominate the asset values into U.S. dollars. This % of AUM is based on star ratings at the share class level for U.S. domiciled funds, and at a "primary share class" level to represent the star rating of all other funds except for Japan where Nomura provides ratings at the fund level. The "primary share class", as defined by Morningstar, denotes the share class recommended as being the best proxy for the portfolio and in most cases will be the most retail version (based upon annual management charge, minimum investment, currency and other factors). The performance data could have been different if all funds/accounts would have been included. Past performance is not indicative of future results.
- **Percentage of mutual fund assets under management in funds ranked in the 1st or 2nd quartile (one, three and five years)**: All quartile rankings, the assigned peer categories and the asset values used to derive this analysis are sourced from the fund ranking providers mentioned in footnote (b). Quartile rankings are done on the net-of-fee absolute return of each fund. The data providers re-denominate the asset values into U.S. dollars. This % of AUM is based on fund performance and associated peer rankings at the share class level for U.S. domiciled funds and at the "primary share class" level or fund level for all other funds. The "primary share class", as defined by Morningstar, denotes the share class recommended as being the best proxy for the portfolio and in most cases will be the most retail version (based upon annual management charge, minimum investment, currency and other factors). Where peer group rankings given for a fund are in more than one "primary share class" territory both rankings are included to reflect local market competitiveness. The performance data could have been different if all funds/accounts would have been included. Past performance is not indicative of future results.

Selected metrics

As of or for the year ended December 31, (in millions, except ranking data and ratios)	2020	2019	2018
% of JPM mutual fund assets rated as 4- or 5-star[(a)]	**55 %**	61 %	58 %
% of JPM mutual fund assets ranked in 1st or 2nd quartile:[(b)]			
1 year	**55**	59	68
3 years	**69**	77	73
5 years	**68**	75	85
Selected balance sheet data (period-end)[(c)]			
Total assets	**$203,384**	$173,175	$ 161,047
Loans	**186,608**	158,149	145,794
Deposits	**198,755**	142,740	133,276
Equity	**10,500**	10,500	9,000
Selected balance sheet data (average)[(c)]			
Total assets	**$181,432**	$161,863	$ 151,632
Loans	**166,311**	147,404	136,929
Deposits	**161,955**	135,265	132,123
Equity	**10,500**	10,500	9,000
Headcount	**20,683**	21,550	21,520
Number of Wealth Management client advisors	**2,462**	2,419	2,385
Credit data and quality statistics[(c)]			
Net charge-offs/(recoveries)	**$ (14)**	$ 29	$ –
Nonaccrual loans	**785**	115	263
Allowance for credit losses:			
Allowance for loan losses	**598**	350	326
Allowance for lending-related commitments	**38**	19	16
Total allowance for credit losses	**636**	369	342
Net charge-off/(recovery) rate	**(0.01)%**	0.02 %	– %
Allowance for loan losses to period-end loans	**0.32**	0.22	0.22
Allowance for loan losses to nonaccrual loans	**76**	304	124
Nonaccrual loans to period-end loans	**0.42**	0.07	0.18

In the fourth quarter of 2020, the Firm realigned certain wealth management clients from AWM to CCB. Prior-period amounts have been revised to conform with the current presentation, including a decrease to headcount of 2,641 and 2,400 as of December 31, 2019 and 2018, respectively.

(a) Represents the Nomura "star rating" for Japan domiciled funds and Morningstar for all other domiciled funds. Includes only Asset Management retail open-ended mutual funds that have a rating. Excludes money market funds, Undiscovered Managers Fund, and Brazil domiciled funds.

(b) Quartile ranking sourced from Lipper, Morningstar and Nomura based on country of domicile. Includes only Asset Management retail open-ended mutual funds that are ranked by the aforementioned sources. Excludes money market funds, Undiscovered Managers Fund, and Brazil domiciled funds.

(c) Loans, deposits and related credit data and quality statistics relate to the Wealth Management business.

Client assets

2020 compared with 2019

Client assets were $3.7 trillion, an increase of 18%. Assets under management were $2.7 trillion, an increase of 17% driven by the impact of higher market levels and net inflows into both long-term and liquidity products.

Client assets

December 31, (in billions)	2020	2019	2018
Assets by asset class			
Liquidity	**$ 641**	$ 539	$ 477
Fixed income	**671**	591	455
Equity	**595**	463	376
Multi-asset	**656**	596	515
Alternatives	**153**	139	135
Total assets under management	**2,716**	2,328	1,958
Custody/brokerage/ administration/deposits	**936**	761	661
Total client assets	**$ 3,652**	$ 3,089	$ 2,619
Assets by client segment			
Private Banking	**$ 689**	$ 628	$ 518
Institutional	**1,273**	1,081	930
Retail	**754**	619	510
Total assets under management	**$ 2,716**	$ 2,328	$ 1,958
Private Banking	**$ 1,581**	$ 1,359	$ 1,155
Institutional	**1,311**	1,106	950
Retail	**760**	624	514
Total client assets	**$ 3,652**	$ 3,089	$ 2,619

Client assets (continued)

Year ended December 31, (in billions)	2020	2019	2018
Assets under management rollforward			
Beginning balance	**$ 2,328**	$ 1,958	$ 2,010
Net asset flows:			
Liquidity	**104**	61	30
Fixed income	**48**	104	(4)
Equity	**33**	(11)	–
Multi-asset	**5**	2	17
Alternatives	**6**	2	5
Market/performance/other impacts	**192**	212	(100)
Ending balance, December 31	**$ 2,716**	$ 2,328	$ 1,958
Client assets rollforward			
Beginning balance	**$ 3,089**	$ 2,619	$ 2,685
Net asset flows	**276**	176	74
Market/performance/other impacts	**287**	294	(140)
Ending balance, December 31	**$ 3,652**	$ 3,089	$ 2,619

In the fourth quarter of 2020, the Firm realigned certain wealth management clients from AWM to CCB. Prior-period amounts have been revised to conform with the current presentation, including a decrease to client assets of $137 billion and $114 billion as of December 31, 2019 and 2018, respectively.

International metrics

Year ended December 31, (in billions, except where otherwise noted)	2020	2019	2018
Total net revenue (in millions)[a]			
Europe/Middle East/Africa[b]	**$ 2,956**	$ 2,869	$ 2,850
Asia-Pacific[b]	**1,665**	1,509	1,538
Latin America/Caribbean[b]	**782**	724	755
Total international net revenue	**5,403**	5,102	5,143
North America	**8,837**	8,489	8,284
Total net revenue	**$ 14,240**	$ 13,591	$ 13,427
Assets under management			
Europe/Middle East/Africa[b]	**$ 517**	$ 428	$ 366
Asia-Pacific[b]	**224**	192	163
Latin America/Caribbean[b]	**70**	62	51
Total international assets under management	**811**	682	580
North America	**1,905**	1,646	1,378
Total assets under management	**$ 2,716**	$ 2,328	$ 1,958
Client assets			
Europe/Middle East/Africa[b]	**$ 622**	$ 520	$ 440
Asia-Pacific[b]	**330**	272	226
Latin America/Caribbean[b]	**166**	147	125
Total international client assets	**1,118**	939	791
North America	**2,534**	2,150	1,828
Total client assets	**$ 3,652**	$ 3,089	$ 2,619

In the fourth quarter of 2020, the Firm realigned certain wealth management clients from AWM to CCB. Prior-period amounts have been revised to conform with the current presentation, including a decrease to net revenue of $725 million and $649 million for the years ended December 31, 2019 and 2018, respectively, and client assets of $137 billion and $114 billion as of December 31, 2019 and 2018, respectively.

(a) Regional revenue is based on the domicile of the client.
(b) The prior period amounts have been revised to conform with the current period presentation.

The Corporate segment consists of Treasury and Chief Investment Office and Other Corporate, which includes corporate staff functions and expense that is centrally managed. Treasury and CIO is predominantly responsible for measuring, monitoring, reporting and managing the Firm's liquidity, funding, capital, structural interest rate and foreign exchange risks. The major Other Corporate functions include Real Estate, Technology, Legal, Corporate Finance, Human Resources, Internal Audit, Risk Management, Compliance, Control Management, Corporate Responsibility and various Other Corporate groups.

Selected income statement and balance sheet data

Year ended December 31, (in millions, except headcount)	2020	2019	2018
Revenue			
Principal transactions	**$ 245**	$ (461)	$ (426)
Investment securities gains/(losses)	**795**	258	(395)
All other income	**159**	89	558
Noninterest revenue	**1,199**	(114)	(263)
Net interest income	**(2,375)**	1,325	135
Total net revenue[a]	**(1,176)**	1,211	(128)
Provision for credit losses	**66**	(1)	(4)
Noninterest expense	**1,373**	1,067	902
Income/(loss) before income tax expense/(benefit)	**(2,615)**	145	(1,026)
Income tax expense/(benefit)	**(865)**	(966)	215
Net income/(loss)	**$ (1,750)**	$ 1,111	$ (1,241)
Total net revenue			
Treasury and CIO	**(1,368)**	2,032	510
Other Corporate	**192**	(821)	(638)
Total net revenue	**$ (1,176)**	$ 1,211	$ (128)
Net income/(loss)			
Treasury and CIO	**(1,403)**	1,394	(69)
Other Corporate	**(347)**	(283)	(1,172)
Total net income/(loss)	**$ (1,750)**	$ 1,111	$ (1,241)
Total assets (period-end)	**$1,359,831**	$ 837,618	$ 771,787
Loans (period-end)	**1,657**	1,649	1,597
Headcount	**38,366**	38,033	37,145

(a) Included tax-equivalent adjustments, driven by tax-exempt income from municipal bonds, of $241 million, $314 million and $382 million for the years ended December 31, 2020, 2019 and 2018, respectively.

2020 compared with 2019

Net income was a loss of $1.8 billion compared with income of $1.1 billion in the prior year.

Net revenue was a loss of $1.2 billion, compared with revenue of $1.2 billion in the prior year, driven by lower net interest income partially offset by higher noninterest revenue. The decrease in net interest income was predominantly driven by lower rates, including the impact of faster prepayments on mortgage-backed securities, as well as limited opportunities to deploy funds in response to significant deposit growth across the LOBs.

Noninterest revenue increased reflecting higher net valuations on certain legacy equity investments and higher net investment securities gains due to the repositioning of the investment securities portfolio.

Noninterest expense of $1.4 billion was up $305 million driven by an impairment on a legacy investment.

The provision for credit losses relates to the HTM portfolio, which became subject to the CECL accounting guidance beginning on January 1, 2020.

Refer to Note 10 and Note 13 for additional information on the investment securities portfolio and the allowance for credit losses.

The current period income tax benefit was predominantly driven by a lower level of pre-tax income and changes in the level and mix of income and expenses subject to U.S. federal, and state and local taxes. The prior period included $1.1 billion of tax benefits related to the resolution of certain tax audits.

Treasury and CIO overview

Treasury and CIO is predominantly responsible for measuring, monitoring, reporting and managing the Firm's liquidity, funding, capital, structural interest rate and foreign exchange risks. The risks managed by Treasury and CIO arise from the activities undertaken by the Firm's four major reportable business segments to serve their respective client bases, which generate both on- and off-balance sheet assets and liabilities.

Treasury and CIO seek to achieve the Firm's asset-liability management objectives generally by investing in high-quality securities that are managed for the longer-term as part of the Firm's investment securities portfolio. Treasury and CIO also use derivatives to meet the Firm's asset-liability management objectives. Refer to Note 5 for further information on derivatives. In addition, Treasury and CIO manage the Firm's cash position primarily through deposits at central banks and investments in short-term instruments. Refer to Liquidity Risk Management on pages 102–108 for further information on liquidity and funding risk. Refer to Market Risk Management on pages 135–142 for information on interest rate, foreign exchange and other risks.

The investment securities portfolio primarily consists of U.S. GSE and government agency and nonagency mortgage-backed securities, U.S. and non-U.S. government securities, obligations of U.S. states and municipalities, other ABS and corporate debt securities. At December 31, 2020, the investment securities portfolio was $587.9 billion, and the average credit rating of the securities comprising the portfolio was AA+ (based upon external ratings where available and, where not available, based primarily upon internal risk ratings). Refer to Note 10 for further information on the Firm's investment securities portfolio and internal risk ratings.

Selected income statement and balance sheet data

As of or for the year ended December 31, (in millions)	2020	2019	2018
Investment securities gains/ (losses)	$ 795	$ 258	$ (395)
Available-for-sale securities (average)	$ 413,367	$ 283,205	$ 203,449
Held-to-maturity securities (average)	94,569	34,939	31,747
Investment securities portfolio (average)	$ 507,936	$ 318,144	$ 235,196
Available-for-sale securities (period-end)	$ 386,065	$ 348,876	$ 228,681
Held-to-maturity securities, net of allowance for credit losses (period-end)[a][b]	201,821	47,540	31,434
Investment securities portfolio, net of allowance for credit losses (period-end)[a]	$ 587,886	$ 396,416	$ 260,115

(a) At December 31, 2020, the allowance for credit losses on HTM securities was $78 million.
(b) During 2020, the Firm transferred $164.2 billion of investment securities from AFS to HTM for capital management purposes.

Refer to Note 10 for further information.

Risk is an inherent part of JPMorgan Chase's business activities. When the Firm extends a consumer or wholesale loan, advises customers and clients on their investment decisions, makes markets in securities, or offers other products or services, the Firm takes on some degree of risk. The Firm's overall objective is to manage its businesses, and the associated risks, in a manner that balances serving the interests of its clients, customers and investors and protects the safety and soundness of the Firm.

The Firm believes that effective risk management requires, among other things:

- Acceptance of responsibility, including identification and escalation of risks by all individuals within the Firm;
- Ownership of risk identification, assessment, data and management within each of the LOBs and Corporate; and
- Firmwide structures for risk governance.

The Firm follows a disciplined and balanced compensation framework with strong internal governance and independent oversight by the Board of Directors (the "Board"). The impact of risk and control issues is carefully considered in the Firm's performance evaluation and incentive compensation processes.

Risk governance and oversight framework

The Firm's risk management governance and oversight framework involves understanding drivers of risks, types of risks, and impacts of risks.

Drivers of Risks are factors that cause a risk to exist. Drivers of risks include the economic environment, regulatory and government policy, competitor and market evolution, business decisions, process and judgment error, deliberate wrongdoing, dysfunctional markets, and natural disasters.

Types of Risks are categories by which risks manifest themselves. Risks are generally categorized in the following four risk types:

- Strategic risk is the risk to earnings, capital, liquidity or reputation associated with poorly designed or failed business plans or inadequate response to changes in the operating environment.
- Credit and investment risk is the risk associated with the default or change in credit profile of a client, counterparty or customer; or loss of principal or a reduction in expected returns on investments, including consumer credit risk, wholesale credit risk, and investment portfolio risk.
- Market risk is the risk associated with the effect of changes in market factors, such as interest and foreign exchange rates, equity and commodity prices, credit spreads or implied volatilities, on the value of assets and liabilities held for both the short and long term.
- Operational risk is the risk associated with an adverse outcome resulting from inadequate or failed internal processes or systems; human factors; or external events impacting the Firm's processes or systems. It includes compliance, conduct, legal, and estimations and model risk.

Impacts of Risks are consequences of risks, both quantitative and qualitative. There may be many consequences of risks manifesting, including quantitative impacts such as a reduction in earnings and capital, liquidity outflows, and fines or penalties, or qualitative impacts such as reputation damage, loss of clients and customers, and regulatory and enforcement actions.

The Firm's risk governance and oversight framework is managed on a Firmwide basis. The Firm has an Independent Risk Management ("IRM") function, which consists of the Risk Management and Compliance organizations. The Chief Executive Officer ("CEO") appoints, subject to approval by the Risk Committee of the Board ("Board Risk Committee"), the Firm's Chief Risk Officer ("CRO") to lead the IRM organization and manage the risk governance structure of the Firm. The framework is subject to approval by the Board Risk Committee in the form of the Risk Governance and Oversight Policy. The Firm's CRO oversees and delegates authorities to LOB CROs, Firmwide Risk Executives ("FREs"), and the Firm's Chief Compliance Officer ("CCO"), who each establish Risk Management and Compliance organizations, set the Firm's risk governance policies and standards, and define and oversee the implementation of the Firm's risk governance. The LOB CROs are responsible for risks that arise in their LOBs, while FREs oversee risk areas that span across the individual LOBs, functions and regions.

Three lines of defense

The Firm relies upon each of its LOBs and Corporate areas giving rise to risk to operate within the parameters identified by the IRM function, and within its own management-identified risk and control standards. Each LOB and Treasury & CIO, including their aligned Operations, Technology and Control Management, are the Firm's "first line of defense" and own the identification of risks, as well as the design and execution of controls to manage those risks. The first line of defense is responsible for adherence to applicable laws, rules and regulations and for the implementation of the risk management structure (which may include policy, standards, limits, thresholds and controls) established by IRM.

The IRM function is independent of the businesses and is the Firm's "second line of defense." The IRM function independently assesses and challenges the first line of defense risk management practices. IRM is also responsible for its own adherence to applicable laws, rules and regulations and for the implementation of policies and standards established by IRM with respect to its own processes.

Internal Audit is an independent function that provides objective assessment on the adequacy and effectiveness of Firmwide processes, controls, governance and risk management as the "third line of defense." The Internal Audit Function is headed by the General Auditor, who reports to the Audit Committee and administratively to the CEO.

In addition, there are other functions that contribute to the Firmwide control environment but are not considered part of a particular line of defense, including Finance, Human Resources and Legal.

Risk identification and ownership

Each LOB and Corporate area owns the ongoing identification of risks, as well as the design and execution of controls, inclusive of IRM-specified controls, to manage those risks. To support this activity, the Firm has a formal Risk Identification framework designed to facilitate their responsibility to identify material risks inherent to the Firm, catalog them in a central repository and review the most material risks on a regular basis. The IRM function reviews and challenges the LOB and Corporate's identified risks, maintains the central repository and provides the consolidated Firmwide results to the Firmwide Risk Committee ("FRC") and Board Risk Committee.

Risk appetite

The Firm's overall appetite for risk is governed by a "Risk Appetite" framework. The framework and the Firm's risk appetite are set and approved by the Firm's CEO, Chief Financial Officer ("CFO") and CRO. Quantitative parameters and qualitative factors are used to monitor and measure the Firm's capacity to take risk consistent with its stated risk appetite. Qualitative factors have been established to assess select operational risks, and impact to the Firm's reputation. Risk Appetite results are reported to the Board Risk Committee.

Risk governance and oversight structure

The independent status of the IRM function is supported by a governance structure that provides for escalation of risk issues to senior management, the FRC, and the Board of Directors, as appropriate.

The chart below illustrates the committees of the Board of Directors and key senior management-level committees in the Firm's risk governance structure. In addition, there are other committees, forums and paths of escalation that support the oversight of risk which are not shown in the chart below or described in this Form 10-K.

(a) Includes the CEO for Consumer Lending, the CEO for Consumer Banking, and select Business Heads; the CEOs for Corporate & Investment Bank and Consumer & Community Banking are also the Firm's Co-Presidents and Co-Chief Operating Officers.
(b) The General Auditor reports to the Audit Committee and administratively to the CEO.
(c) The Firmwide Risk Committee escalates significant issues directly to the Board Risk Committee as appropriate. The CRO may also escalate directly to the Board Risk Committee.

The Firm's Operating Committee, which consists of the Firm's CEO, CRO, CFO, General Counsel, CEOs of the LOBs and other senior executives, is accountable to and may refer matters to the Firm's Board of Directors. The Operating Committee is responsible for escalating to the Board the information necessary to facilitate the Board's exercise of its duties.

Board oversight

The Firm's Board of Directors provides oversight of risk. The Board Risk Committee is the principal committee that oversees risk matters. The Audit Committee oversees the control environment, and the Compensation & Management Development Committee oversees compensation and other management-related matters. Each committee of the Board oversees reputational risks and conduct risks within its scope of responsibility.

The JPMorgan Chase Bank, N.A. Board of Directors is responsible for the oversight of management of the bank. The JPMorgan Chase Bank, N.A. Board accomplishes this function acting directly and through the principal standing committees of the Firm's Board of Directors. Risk and control oversight on behalf of JPMorgan Chase Bank N.A. is primarily the responsibility of the Risk Committee and the Audit Committee, respectively, and, with respect to compensation and other management-related matters, the Compensation & Management Development Committee.

The Board Risk Committee assists the Board in its oversight of management's responsibility to implement a global risk management framework reasonably designed to identify, assess and manage the Firm's risks. The Board Risk Committee's responsibilities include approval of applicable primary risk policies and review of certain associated frameworks, analysis and reporting established by management. Breaches in risk appetite and parameters, issues that may have a material adverse impact on the Firm, including capital and liquidity issues, and other significant risk-related matters are escalated to the Board Risk Committee, as appropriate.

The Audit Committee assists the Board in its oversight of management's responsibility to ensure that there is an effective system of controls reasonably designed to safeguard the Firm's assets and income, ensure the integrity of the Firm's financial statements, and maintain compliance with the Firm's ethical standards, policies, plans and procedures, and with laws and regulations. It also assists the Board in its oversight of the Firm's independent registered public accounting firm's qualifications, independence and performance, and of the performance of the Firm's Internal Audit function.

The Compensation & Management Development Committee ("CMDC") assists the Board in its oversight of the Firm's compensation principles and practices. The CMDC reviews and approves the Firm's compensation and qualified benefits programs. The Committee reviews the performance of Operating Committee members against their goals, and approves their compensation awards. In addition, the CEO's award is subject to ratification by the independent directors of the Board. The CMDC also reviews the development of and succession for key executives, and provides oversight of the Firm's culture, including reviewing updates from management regarding significant conduct issues and any related employee actions, including compensation actions.

The Public Responsibility Committee assists the Board in its oversight of the Firm's positions and practices on public responsibility matters such as community investment, fair lending, sustainability, consumer practices and other public policy issues that reflect the Firm's values and character and could impact the Firm's reputation among its stakeholders. The Committee also provides guidance on these matters to management and the Board, as appropriate.

The Corporate Governance & Nominating Committee exercises general oversight with respect to the governance of the Board of Directors. It reviews the qualifications of and recommends to the Board of Directors proposed nominees for election to the Board. The Committee evaluates and recommends to the Board corporate governance practices applicable to the Firm. It also appraises the framework for assessing the Board's performance and self-evaluation.

Management oversight

The Firm's senior management-level committees that are primarily responsible for key risk-related functions include:

The Firmwide Risk Committee ("FRC") is the Firm's highest management-level risk committee. It provides oversight of the risks inherent in the Firm's businesses and serves as an escalation point for risk topics and issues raised by underlying committees and/or FRC members.

The Firmwide Control Committee ("FCC") is an escalation committee for senior management to review and discuss the Firmwide operational risk environment including identified issues, operational risk metrics and significant events that have been escalated.

Line of Business and Regional Risk Committees are responsible for providing oversight of the governance, limits, and controls that are in place through the scope of their activities. These committees review the ways in which the particular LOB or the business operating in a particular region could be exposed to adverse outcomes with a focus on identifying, accepting, escalating and/or requiring remediation of matters brought to these committees.

Line of Business and Corporate Function Control Committees oversee the operational risk and control environment of their respective business or function, inclusive of Operational Risk, Compliance and Conduct Risks. As part of that mandate, they are responsible for reviewing indicators of elevated or emerging risks and other data that may impact the level of operating risk in a business or function, addressing key operational risk issues, focusing on processes with control concerns and overseeing control remediation.

The Asset and Liability Committee ("ALCO") is responsible for overseeing the Firm's asset and liability management ("ALM") activities and the management of liquidity risk, balance sheet, interest rate risk, and capital risk.

The Firmwide Valuation Governance Forum ("VGF") is composed of senior finance and risk executives and is responsible for overseeing the management of risks arising from valuation activities conducted across the Firm.

Risk governance and oversight functions

The Firm manages its risk through risk governance and oversight functions. The scope of a particular function may include one or more drivers, types and/or impacts of risk. For example, Country Risk Management oversees country risk which may be a driver of risk or an aggregation of exposures that could give rise to multiple risk types such as credit or market risk.

The following sections discuss the risk governance and oversight functions in place to manage the risks inherent in the Firms business activities.

STRATEGIC RISK MANAGEMENT

Strategic risk is the risk to earnings, capital, liquidity or reputation associated with poorly designed or failed business plans or inadequate response to changes in the operating environment.

Management and oversight

The Operating Committee and the senior leadership of each LOB and Corporate are responsible for managing the Firm's most significant strategic risks. Strategic risks are overseen by IRM through participation in relevant business reviews, LOB and Corporate senior management meetings, risk and control committees and other relevant governance forums and ongoing discussions. The Board of Directors oversees management's strategic decisions, and the Board Risk Committee oversees IRM and the Firm's risk management framework.

In the process of developing business plans and strategic initiatives, LOB and Corporate senior management identify the associated risks that are incorporated into the Firmwide Risk Identification process and monitored and assessed as part of the Firmwide Risk Appetite framework.

In addition, IRM conducts a qualitative assessment of the LOB and Corporate strategic initiatives to assess their impact on the risk profile of the Firm.

The Firm's strategic planning process, which includes the development and execution of strategic initiatives, is one component of managing the Firm's strategic risk. Guided by the Firm's How We Do Business Principles (the "Principles"), the Operating Committee and senior management teams in each LOB and Corporate review and update the strategic plan periodically. The process includes evaluating the high-level strategic framework and performance against prior-year initiatives, assessing the operating environment, refining existing strategies and developing new strategies.

These strategic initiatives, along with IRM's assessment, are incorporated in the Firm's budget and provided to the Board for review.

The Firm's balance sheet strategy, which focuses on risk-adjusted returns, strong capital and robust liquidity, is also a component in the management of strategic risk. Refer to Capital Risk Management on pages 91-101 for further information on capital risk. Refer to Liquidity Risk Management on pages 102–108 for further information on liquidity risk. Refer to Reputation Risk Management on page 109 for further information on reputation risk.

Capital risk is the risk the Firm has an insufficient level or composition of capital to support the Firm's business activities and associated risks during normal economic environments and under stressed conditions.

A strong capital position is essential to the Firm's business strategy and competitive position. Maintaining a strong balance sheet to manage through economic volatility is considered a strategic imperative of the Firm's Board of Directors, CEO and Operating Committee. The Firm's fortress balance sheet philosophy focuses on risk-adjusted returns, strong capital and robust liquidity. The Firm's capital risk management strategy focuses on maintaining long-term stability to enable the Firm to build and invest in market-leading businesses, including in highly stressed environments. Senior management considers the implications on the Firm's capital prior to making any significant decisions that could impact future business activities. In addition to considering the Firm's earnings outlook, senior management evaluates all sources and uses of capital with a view to ensuring the Firm's capital strength.

Capital management oversight

The Firm has a Capital Management Oversight function whose primary objective is to provide independent oversight of capital risk across the Firm.

Capital Management Oversight's responsibilities include:

- Defining, monitoring and reporting capital risk metrics;
- Establishing, calibrating and monitoring capital risk limits and indicators, including capital risk appetite;
- Developing a process to classify, monitor and report capital limit breaches; and
- Performing an independent assessment of the Firm's capital management activities, including changes made to the Contingency Capital Plan described below.

In addition, the Basel Independent Review function ("BIR"), which is a part of the IRM function, conducts independent assessments of the Firm's regulatory capital framework. These assessments are intended to ensure compliance with the applicable regulatory capital rules in support of senior management's responsibility for managing capital and for the Board Risk Committee's oversight of management in executing that responsibility.

Capital management

Treasury & CIO is responsible for capital management.

The primary objectives of the Firm's capital management are to:

- Maintain sufficient capital in order to continue to build and invest in the Firm's businesses through the cycle and in stressed environments;
- Retain flexibility to take advantage of future investment opportunities;
- Promote the Firm's ability to serve as a source of strength to its subsidiaries;
- Ensure the Firm operates above the minimum regulatory capital ratios as well as maintain "well-capitalized" status for the Firm and its insured depository institution ("IDI") subsidiaries at all times under applicable regulatory capital requirements;
- Meet capital distribution objectives; and
- Maintain sufficient capital resources to operate throughout a resolution period in accordance with the Firm's preferred resolution strategy.

The Firm addresses these objectives through establishing internal minimum capital requirements and a strong capital governance framework. The internal minimum capital levels consider the Firm's regulatory capital requirements as well as an internal assessment of capital adequacy, in normal economic cycles and in stress events, when setting its minimum capital levels.

Capital management is intended to be flexible in order to react to a range of potential events.

The current capital governance framework requires regular monitoring of the Firm's capital position and follows prescribed escalation protocols, both at the Firm and material legal entity levels.

Governance

Committees responsible for overseeing the Firm's capital management include the Capital Governance Committee, the Treasurer Committee and the Firmwide ALCO. Oversight of capital management is governed through the CIO, Treasury and Corporate ("CTC") Risk Committee. In addition, the Board Risk Committee periodically reviews the Firm's capital risk tolerance. Refer to Firmwide Risk Management on pages 85-89 for additional discussion on the Board Risk Committee and the ALCO.

Capital planning and stress testing

Comprehensive Capital Analysis and Review

The Federal Reserve requires large BHCs, including the Firm, to submit at least annually a capital plan that has been reviewed and approved by the Board of Directors. The Federal Reserve uses CCAR and other stress testing processes to ensure that large BHCs have sufficient capital during periods of economic and financial stress, and have robust, forward-looking capital assessment and planning processes in place that address each BHC's unique risks to enable it to absorb losses under certain stress scenarios. Through CCAR, the Federal Reserve evaluates each BHC's capital adequacy and internal capital adequacy assessment processes ("ICAAP"), as well as its plans to make capital distributions, such as dividend payments or stock repurchases. The Federal Reserve uses results under the severely adverse scenario from its supervisory stress test to determine each firm's SCB requirement for the coming year. Refer to Key Regulatory Developments on pages 93–94 for additional information.

On June 29, 2020, the Firm announced that it had completed the 2020 CCAR stress test process. On August 10, 2020, the Federal Reserve affirmed the Firm's SCB requirement of 3.3% and the Firm's minimum Standardized CET1 capital ratio of 11.3% (up from 10.5%). The SCB requirement became effective on October 1, 2020.

In June 2020, the Federal Reserve determined that changes in financial markets or the macroeconomic outlook due to the COVID-19 pandemic could have a material effect on a firm's risk profile and financial condition and therefore required all large bank holding companies, including the Firm, to update and resubmit their capital plans by November 2, 2020. On December 18, 2020, the Federal Reserve released its results from the 2020 CCAR Round 2 stress test, which showed that large banks had strong levels of capital and announced that it would allow all large banks, including the Firm, to resume share repurchases commencing in the first quarter of 2021, subject to certain restrictions for at least the first quarter of 2021 given considerable economic uncertainty remained. The Federal Reserve has stated that due to uncertainty about future economic conditions and the ultimate path of the current recovery, the SCB will not be reset at this time. The Federal Reserve will notify firms by March 31, 2021 whether a revised SCB requirement based on the 2020 CCAR Round 2 stress test will be recalculated ahead of the 2021 annual CCAR assessment.

Refer to Capital actions on page 99 for information on actions taken by the Firm's Board of Directors following the 2020 CCAR results.

Internal Capital Adequacy Assessment Process
Annually, the Firm prepares the ICAAP, which informs the Board of Directors of the ongoing assessment of the Firm's processes for managing the sources and uses of capital as well as compliance with supervisory expectations for capital planning and capital adequacy. The Firm's ICAAP integrates stress testing protocols with capital planning.

The CCAR and other stress testing processes assess the potential impact of alternative economic and business scenarios on the Firm's earnings and capital. Economic scenarios, and the parameters underlying those scenarios, are defined centrally and applied uniformly across the businesses. These scenarios are articulated in terms of macroeconomic factors, which are key drivers of business results; global market shocks, which generate short-term but severe trading losses; and idiosyncratic operational risk events. The scenarios are intended to capture and stress key vulnerabilities and idiosyncratic risks facing the Firm. However, when defining a broad range of scenarios, actual events can be worse. Accordingly, management considers additional stresses outside these scenarios, as necessary. These results are reviewed by management and the Board of Directors.

Contingency capital plan

The Firm's contingency capital plan establishes the capital management framework for the Firm and specifies the principles underlying the Firm's approach towards capital management in normal economic conditions and during stress. The contingency capital plan defines how the Firm calibrates its targeted capital levels and meets minimum capital requirements, monitors the ongoing appropriateness of planned capital distributions, and sets out the capital contingency actions that are expected to be taken or considered at various levels of capital depletion during a period of stress.

Regulatory capital

The Federal Reserve establishes capital requirements, including well-capitalized standards, for the consolidated financial holding company. The OCC establishes similar minimum capital requirements and standards for the Firm's IDI subsidiaries, including JPMorgan Chase Bank, N.A. The U.S. capital requirements generally follow the Capital Accord of the Basel Committee, as amended from time to time.

Basel III Overview
The capital rules under Basel III establish minimum capital ratios and overall capital adequacy standards for large and internationally active U.S. BHCs and banks, including the Firm and its IDI subsidiaries, including JPMorgan Chase Bank, N.A. The minimum amount of regulatory capital that must be held by BHCs and banks is determined by calculating risk-weighted assets ("RWA"), which are on-balance sheet assets and off-balance sheet exposures, weighted according to risk. Two comprehensive approaches are prescribed for calculating RWA: a standardized approach ("Basel III Standardized"), and an advanced approach ("Basel III Advanced"). For each of the risk-based capital ratios, the capital adequacy of the Firm is evaluated against the lower of the Standardized or Advanced approaches compared to their respective minimum capital ratios.

Basel III establishes capital requirements for calculating credit risk RWA and market risk RWA, and in the case of Basel III Advanced, operational risk RWA. Key differences in the calculation of credit risk RWA between the Standardized and Advanced approaches are that for Basel III Advanced, credit risk RWA is based on risk-sensitive approaches which largely rely on the use of internal credit models and parameters, whereas for Basel III Standardized, credit risk RWA is generally based on supervisory risk-weightings which vary primarily by counterparty type and asset class. Market risk RWA is calculated on a generally consistent basis between Basel III Standardized and Basel III Advanced. In addition to the RWA calculated under these approaches, the Firm may supplement such amounts to incorporate management judgment and feedback from its regulators.

Basel III also includes a requirement for Advanced Approach banking organizations, including the Firm, to calculate the SLR. Refer to SLR on page 98 for additional information.

COVID-19 Pandemic
The Firm has been impacted by market events as a result of the COVID-19 pandemic, but remains well-capitalized. However, the continuation or further deterioration of the current macroeconomic environment could result in impacts to the Firm’s capital and leverage.

Key Regulatory Developments

Current Expected Credit Losses. Effective January 1, 2020, the Firm adopted the Financial Instruments – Credit Losses guidance under U.S. GAAP. As permitted under the U.S. capital rules issued by the federal banking agencies in 2019, the Firm initially elected to phase-in the January 1, 2020 (“day 1”) CECL adoption impact to retained earnings of $2.7 billion to CET1 capital, at 25% per year in each of 2020 to 2023. As part of their response to the impact of the COVID-19 pandemic, on March 31, 2020, the federal banking agencies issued an interim final rule (issued as final on August 26, 2020) that provided the option to delay the effects of CECL on regulatory capital for two years, followed by a three-year transition period (“CECL capital transition provisions”).

The final rule provides a uniform approach for estimating the effects of CECL compared to the legacy incurred loss model during the first two years of the transition period (the “day 2” transition amount), whereby the Firm may exclude from CET1 capital 25% of the change in the allowance for credit losses (excluding allowances on PCD loans). The cumulative day 2 transition amount as at December 31, 2021 that is not recognized in CET1 capital, as well as the $2.7 billion day 1 impact, will be phased into CET1 capital at 25% per year beginning January 1, 2022. The Firm has elected to apply the CECL capital transition provisions, and accordingly, for the year ended December 31, 2020, the capital metrics of the Firm exclude $5.7 billion, which is the $2.7 billion day 1 impact to retained earnings and 25% of the $12.2 billion increase in the allowance for credit losses (excluding allowances on PCD loans).

The impacts of the CECL capital transition provisions have also been incorporated into Tier 2 capital, adjusted average assets, and total leverage exposure. Refer to Note 1 for further information on the CECL accounting guidance.

Money Market Mutual Fund Liquidity Facility ("MMLF"). The Federal Reserve established the MMLF facility on March 18, 2020, authorized through at least March 31, 2021, to enhance the liquidity and functioning of money markets. Under the MMLF, the Federal Reserve Bank of Boston (“FRBB”) makes nonrecourse advances to participating financial institutions to purchase certain types of assets from eligible money market mutual fund clients. These assets, which are reflected in other assets on the Firm’s Consolidated balance sheets, are pledged to the FRBB as collateral. On March 23, 2020, the federal banking agencies issued an interim final rule (issued as final on September 29, 2020) to neutralize the effects of purchasing assets through the program on risk-based and leverage-based capital ratios. As of December 31, 2020, the Firm excluded assets purchased from money market mutual fund clients pursuant to nonrecourse advances provided under the MMLF in the amount of $187 million from its RWA and $358 million from adjusted three month average assets and total leverage exposure.

Supplementary leverage ratio temporary revision. On April 1, 2020, the Federal Reserve issued an interim final rule that requires, on a temporary basis, the calculation of total leverage exposure for purposes of calculating the SLR for bank holding companies, to exclude the on-balance sheet amounts of U.S. Treasury securities and deposits at Federal Reserve Banks. These exclusions became effective April 1, 2020, and will remain in effect through March 31, 2021.

On June 1, 2020, the Federal Reserve, OCC and FDIC issued an interim final rule that provides IDI subsidiaries with an option to apply this temporary exclusion subject to certain restrictions. As of December 31, 2020, JPMorgan Chase Bank, N.A. has not elected to apply this exclusion.

Paycheck Protection Program. On April 13, 2020, the federal banking agencies issued an interim final rule (issued as final on September 29, 2020) to neutralize the regulatory capital effects of participating in the PPP on risk-based capital ratios by applying a zero percent risk weight to loans originated under the program. Given that PPP loans are guaranteed by the SBA, the Firm does not expect to realize material credit losses on these loans. As of December 31, 2020, the Firm had approximately $27 billion of loans under the program.

The rule also provides that if a PPP loan is pledged as collateral for a non-recourse loan under the Federal Reserve’s Paycheck Protection Program Lending (“PPPL”) Facility, the PPP loan can be excluded from leverage-based capital ratios. As of December 31, 2020, the Firm had not participated in the PPPL Facility.

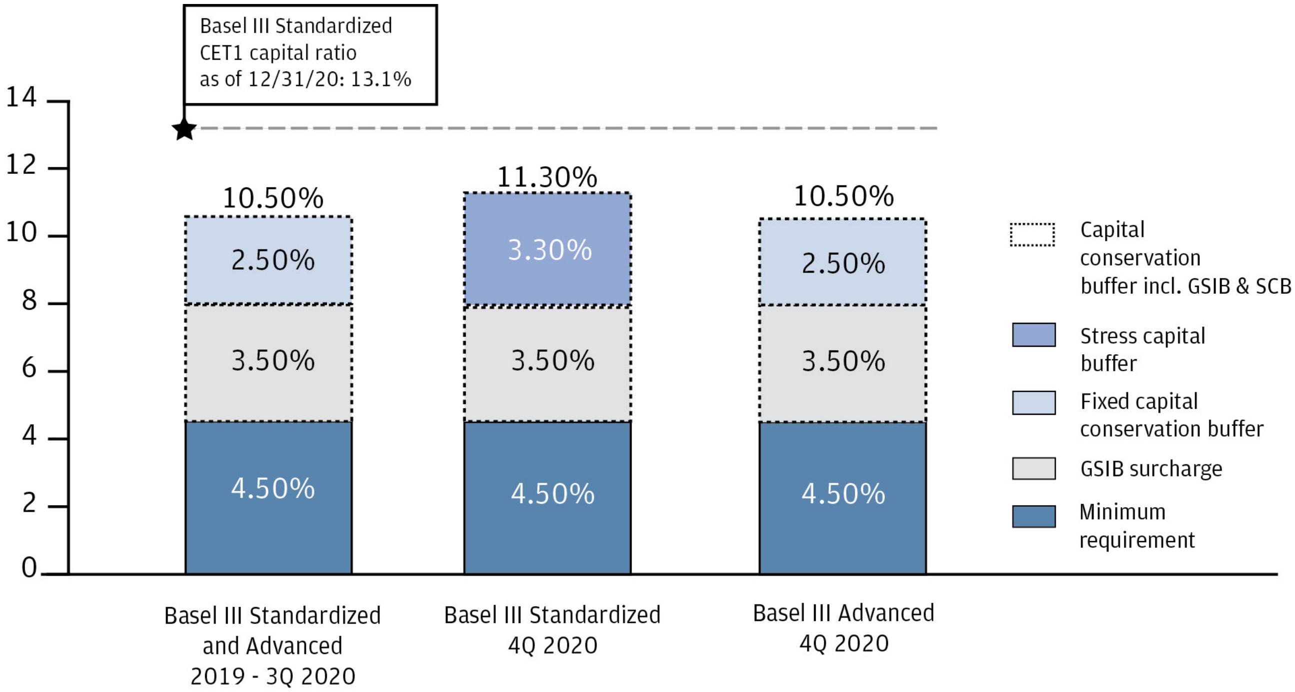
Refer to Regulatory Developments Relating to the COVID-19 Pandemic on pages 52-53 for additional information on regulatory actions and significant financing programs that the U.S. government and regulators have introduced to address the effects of the COVID-19 pandemic.

Stress Capital Buffer. On March 4, 2020, the Federal Reserve issued the final rule introducing the SCB framework for the Basel III Standardized approach that is designed to more closely integrate the results of the quantitative assessment in the annual CCAR with the ongoing minimum capital requirements for BHCs under the U.S. Basel III rules. The final rule replaces the fixed 2.5% CET1 capital conservation buffer in the Standardized approach with a dynamic institution-specific SCB. The final rule does not apply to the U.S. Basel III Advanced approach capital requirements. The SCB requirement for BHCs will be effective on October 1 of each year and is expected to remain in effect until September 30 of the following year.

TLAC Holdings rule. On October 20, 2020, the federal banking agencies issued a final rule prescribing the regulatory capital treatment for holdings of TLAC debt instruments by certain large banking organizations, such as the Firm and JPMorgan Chase Bank, N.A. This rule expands the scope of the existing capital deductions rule around the holdings of capital instruments of financial institutions to also include TLAC debt instruments issued by systemically important banking organizations. The final rule will become effective on April 1, 2021 and is not expected to have a material impact on the Firm's risk-based capital metrics.

Risk-based Capital Regulatory Minimums

The following chart presents the Firm's Basel III minimum CET1 capital ratio under the Basel III rules currently in effect.



The Firm's Basel III Standardized-risk-based ratios are currently more binding than the Basel III Advanced-risk-based ratios.

All banking institutions are currently required to have a minimum CET1 capital ratio of 4.5% of risk-weighted assets.

Certain banking organizations, including the Firm, are required to hold additional levels of capital to serve as a "capital conservation buffer". The capital conservation buffer incorporates a global systemically important bank ("GSIB") surcharge, a discretionary countercyclical capital buffer and a fixed capital conservation buffer of 2.5% for Advanced regulatory capital requirements and a variable SCB requirement, floored at 2.5%, for Standardized regulatory capital requirements.

Under the Federal Reserve's GSIB rule, the Firm is required to assess its GSIB surcharge on an annual basis under two separately prescribed methods based on data for the previous fiscal year-end, and is subject to the higher of the two. The first ("Method 1"), reflects the GSIB surcharge as prescribed by the Basel Committee's assessment methodology, and is calculated across five criteria: size, cross-jurisdictional activity, interconnectedness, complexity and substitutability. The second ("Method 2"), modifies the Method 1 requirements to include a measure of short-term wholesale funding in place of substitutability, and introduces a GSIB score "multiplication factor".

The following table presents the Firm's effective GSIB surcharge for the years ended December 31, 2020 and 2019.

	2020	2019
Fully Phased-In:		
Method 1	2.50 %	2.50 %
Method 2	3.50 %	3.50 %

The Firm's effective regulatory minimum GSIB surcharge calculated under Method 2 remains unchanged at 3.5% for 2021. On November 11, 2020, the Financial Stability Board ("FSB") released its annual GSIB list, which published the Firm's Method 1 GSIB surcharge of 2.0% (down from 2.5%) effective January 1, 2021, based upon data as of December 31, 2019.

The Firm's estimated Method 2 surcharge calculated using data as of December 31, 2020 is 4.0%. Accordingly, based on the GSIB rule currently in effect, the Firm's effective regulatory minimum GSIB surcharge is expected to increase to 4.0% on January 1, 2023 unless the Firm's Method 2 GSIB surcharge calculation based upon data as of December 31, 2021 is lower.

The U.S. federal regulatory capital standards include a framework for setting a discretionary countercyclical capital buffer taking into account the macro financial environment in which large, internationally active banks function. As of December 31, 2020, the U.S. countercyclical capital buffer remained at 0%. The Federal Reserve will continue to review the buffer at least annually. The buffer can be increased if the Federal Reserve, FDIC and OCC determine that systemic risks are meaningfully above normal and can be calibrated up to an additional 2.5% of RWA subject to a 12-month implementation period.

Failure to maintain regulatory capital equal to or in excess of the risk-based regulatory capital minimum plus the capital conservation buffer (inclusive of the GSIB surcharge) and any countercyclical buffer will result in limitations to the amount of capital that the Firm may distribute, such as through dividends and common share repurchases, as well as certain executive discretionary bonus payments.

The Firm has a target Basel III CET1 capital ratio of 12%. However, the Firm may remain above that level in order to satisfy leverage-based capital requirements if deposits continue to grow due to actions taken by the Federal Reserve and the U.S. government in response to the COVID-19 pandemic.

Total Loss-Absorbing Capacity

The Federal Reserve's TLAC rule requires the U.S. GSIB top-tier holding companies, including the Firm, to maintain minimum levels of external TLAC and eligible long-term debt ("eligible LTD"). Refer to TLAC on page 100 for additional information.

Leverage-based Capital Regulatory Minimums

Supplementary leverage ratio

Banking organizations subject to the Basel III Advanced approach are currently required to have a minimum SLR of 3.0%. Certain banking organizations, including the Firm, are also required to hold an additional 2.0% leverage buffer.

The SLR is defined as Tier 1 capital under Basel III divided by the Firm's total leverage exposure. Total leverage exposure is calculated by taking the Firm's total average on-balance sheet assets, less amounts permitted to be deducted for Tier 1 capital, and adding certain off-balance sheet exposures, such as undrawn commitments and derivatives potential future exposure.

Failure to maintain an SLR equal to or greater than the regulatory minimum will result in limitations on the amount of capital that the Firm may distribute such as through dividends and common share repurchases.

Other regulatory capital

In addition to meeting the capital ratio requirements of Basel III, the Firm and its IDI subsidiaries also must maintain minimum capital and leverage ratios in order to be "well-capitalized" under the regulations issued by the Federal Reserve and the Prompt Corrective Action ("PCA") requirements of the FDIC Improvement Act ("FDICIA"), respectively. Refer to Note 27 for additional information.

Additional information regarding the Firm's capital ratios, as well as the U.S. federal regulatory capital standards to which the Firm is subject, is presented in Note 27. Refer to the Firm's Pillar 3 Regulatory Capital Disclosures reports, which are available on the Firm's website, for further information on the Firm's Basel III measures.

The following table presents the Firm's risk-based and leverage-based capital metrics under both the Basel III Standardized and Advanced approaches.

(in millions, except ratios)	Standardized			Advanced		
	December 31, 2020[c][d]	December 31, 2019	Minimum capital ratios[e]	December 31, 2020[c][d]	December 31, 2019	Minimum capital ratios[e]
Risk-based capital metrics:						
CET1 capital	**$ 205,078**	$ 187,753		**$ 205,078**	$ 187,753	
Tier 1 capital	**234,844**	214,432		**234,844**	214,432	
Total capital	**269,923**	242,589		**257,228**	232,112	
Risk-weighted assets	**1,560,609**	1,515,869		**1,484,431**	1,397,878	
CET1 capital ratio	**13.1 %**	12.4 %	**11.3 %**	**13.8 %**	13.4 %	10.5 %
Tier 1 capital ratio	**15.0**	14.1	**12.8**	**15.8**	15.3	12.0
Total capital ratio	**17.3**	16.0	**14.8**	**17.3**	16.6	14.0
Leverage-based capital metrics:						
Adjusted average assets[a]	**$ 3,353,319**	$ 2,730,239		**$ 3,353,319**	$ 2,730,239	
Tier 1 leverage ratio	**7.0 %**	7.9 %	**4.0 %**	**7.0 %**	7.9 %	4.0 %
Total leverage exposure[b]	**NA**	NA		**$ 3,401,542**	$ 3,423,431	
SLR[b]	**NA**	NA	**NA**	**6.9 %**	6.3 %	5.0 %

(a) Adjusted average assets, for purposes of calculating the leverage ratios, includes total quarterly average assets adjusted for on-balance sheet assets that are subject to deduction from Tier 1 capital, predominantly goodwill and other intangible assets.
(b) As of December 31, 2020, total leverage exposure for purposes of calculating the SLR excludes U.S. Treasury securities and deposits at Federal Reserve Banks, as provided by the interim final rule issued by the Federal Reserve on April 1, 2020.
(c) As of December 31, 2020, the capital metrics reflect the CECL capital transition provisions.
(d) As of December 31, 2020, the capital metrics reflect the exclusion of assets purchased from money market mutual fund clients pursuant to nonrecourse advances provided under the MMLF. Additionally, loans originated under the PPP receive a zero percent risk weight.
(e) Represents minimum requirements and regulatory buffers applicable to the Firm. For the period ended December 31, 2019, the CET1, Tier 1, Total, Tier 1 leverage and SLR minimum capital ratios applicable to the Firm were 10.5%, 12.0%, 14.0%, 4.0% and 5.0%, respectively. Refer to Note 27 for additional information.

Capital components

The following table presents reconciliations of total stockholders' equity to Basel III CET1 capital, Tier 1 capital and Total capital as of December 31, 2020 and 2019.

(in millions)	December 31, 2020	December 31, 2019
Total stockholders' equity	**$ 279,354**	$ 261,330
Less: Preferred stock	30,063	26,993
Common stockholders' equity	**249,291**	234,337
Add:		
Certain deferred tax liabilities[(a)]	2,453	2,381
Less:		
Goodwill	49,248	47,823
Other intangible assets	904	819
Other CET1 capital adjustments[(b)]	(3,486)	323
Standardized/Advanced CET1 capital	**205,078**	187,753
Preferred stock	30,063	26,993
Less: Other Tier 1 adjustments	297	314
Standardized/Advanced Tier 1 capital	**$ 234,844**	$ 214,432
Long-term debt and other instruments qualifying as Tier 2 capital	$ 16,645	$ 13,733
Qualifying allowance for credit losses[(c)]	18,372	14,314
Other	62	110
Standardized Tier 2 capital	**$ 35,079**	$ 28,157
Standardized Total capital	**$ 269,923**	$ 242,589
Adjustment in qualifying allowance for credit losses for Advanced Tier 2 capital[(d)]	(12,695)	(10,477)
Advanced Tier 2 capital	**$ 22,384**	$ 17,680
Advanced Total capital	**$ 257,228**	$ 232,112

(a) Represents deferred tax liabilities related to tax-deductible goodwill and to identifiable intangibles created in nontaxable transactions, which are netted against goodwill and other intangibles when calculating CET1 capital.
(b) As of December 31, 2020, the impact of the CECL capital transition provision was an increase in CET1 capital of $5.7 billion.
(c) Represents the allowance for credit losses eligible for inclusion in Tier 2 capital up to 1.25% of credit risk RWA, including the impact of the CECL capital transition provision with any excess deducted from RWA.
(d) Represents an adjustment to qualifying allowance for credit losses for the excess of eligible credit reserves over expected credit losses up to 0.6% of credit risk RWA, including the impact of the CECL capital transition provision with any excess deducted from RWA.

Capital rollforward

The following table presents the changes in Basel III CET1 capital, Tier 1 capital and Tier 2 capital for the year ended December 31, 2020.

Year Ended December 31, (in millions)	2020
Standardized/Advanced CET1 capital at December 31, 2019	$ 187,753
Net income applicable to common equity	27,548
Dividends declared on common stock	(11,119)
Net purchase of treasury stock	(5,135)
Changes in additional paid-in capital	(128)
Changes related to AOCI	6,417
Adjustment related to AOCI[(a)]	(1,829)
Changes related to other CET1 capital adjustments[(b)]	1,571
Change in Standardized/Advanced CET1 capital	17,325
Standardized/Advanced CET1 capital at December 31, 2020	**$ 205,078**
Standardized/Advanced Tier 1 capital at December 31, 2019	$ 214,432
Change in CET1 capital[(b)]	17,325
Net issuance of noncumulative perpetual preferred stock	3,070
Other	17
Change in Standardized/Advanced Tier 1 capital	20,412
Standardized/Advanced Tier 1 capital at December 31, 2020	**$ 234,844**
Standardized Tier 2 capital at December 31, 2019	$ 28,157
Change in long-term debt and other instruments qualifying as Tier 2	2,912
Change in qualifying allowance for credit losses[(b)]	4,058
Other	(48)
Change in Standardized Tier 2 capital	6,922
Standardized Tier 2 capital at December 31, 2020	**$ 35,079**
Standardized Total capital at December 31, 2020	**$ 269,923**
Advanced Tier 2 capital at December 31, 2019	$ 17,680
Change in long-term debt and other instruments qualifying as Tier 2	2,912
Change in qualifying allowance for credit losses[(b)]	1,840
Other	(48)
Change in Advanced Tier 2 capital	4,704
Advanced Tier 2 capital at December 31, 2020	**$ 22,384**
Advanced Total capital at December 31, 2020	**$ 257,228**

(a) Includes cash flow hedges and DVA related to structured notes recorded in AOCI.
(b) Includes the impact of the CECL capital transition provisions.

RWA rollforward

The following table presents changes in the components of RWA under Basel III Standardized and Advanced approaches for the year ended December 31, 2020. The amounts in the rollforward categories are estimates, based on the predominant driver of the change.

	Standardized			Advanced			
Year ended December 31, 2020 (in millions)	Credit risk RWA	Market risk RWA	**Total RWA**	Credit risk RWA	Market risk RWA	Operational risk RWA	**Total RWA**
December 31, 2019	$ 1,440,220	$ 75,649	**$ 1,515,869**	$ 932,948	$ 75,652	$ 389,278	**$ 1,397,878**
Model & data changes[(a)]	(800)	(16,320)	**(17,120)**	(6,100)	(16,320)	–	**(22,420)**
Portfolio runoff[(b)]	(4,450)	–	**(4,450)**	(4,000)	–	–	**(4,000)**
Movement in portfolio levels[(c)]	29,249	37,061	**66,310**	79,482	37,578	(4,087)	**112,973**
Changes in RWA	23,999	20,741	**44,740**	69,382	21,258	(4,087)	**86,553**
December 31, 2020	**$ 1,464,219**	**$ 96,390**	**$ 1,560,609**	**$ 1,002,330**	**$ 96,910**	**$ 385,191**	**$ 1,484,431**

(a) Model & data changes refer to material movements in levels of RWA as a result of revised methodologies and/or treatment per regulatory guidance (exclusive of rule changes).

(b) Portfolio runoff for credit risk RWA primarily reflects reduced risk from position rolloffs in legacy portfolios in Home Lending.

(c) Movement in portfolio levels (inclusive of rule changes) refers to: changes in book size, composition, credit quality, and market movements for credit risk RWA; changes in position and market movements for market risk RWA; updates to cumulative losses for operational risk RWA; and deductions to credit risk RWA for excess eligible credit reserves not eligible for inclusion in Tier 2 capital.

Supplementary leverage ratio

The following table presents the components of the Firm's SLR.

Three months ended (in millions, except ratio)	**December 31, 2020**	December 31, 2019
Tier 1 capital	**$ 234,844**	214,432
Total average assets	3,399,818	2,777,270
Less: Regulatory capital adjustments[(a)]	46,499	47,031
Total adjusted average assets[(b)]	3,353,319	2,730,239
Add: Off-balance sheet exposures[(c)]	729,978	693,192
Less: Exclusion for U.S. Treasuries and Federal Reserve Bank deposits	681,755	–
Total leverage exposure	**$ 3,401,542**	$ 3,423,431
SLR	**6.9 %**	6.3 %

(a) For purposes of calculating the SLR, includes total quarterly average assets adjusted for on-balance sheet assets that are subject to deduction from Tier 1 capital, predominantly goodwill and other intangible assets. As of December 31, 2020, includes adjustments for the CECL capital transition provisions and the exclusion of average assets purchased from money market mutual fund clients pursuant to nonrecourse advances provided under the MMLF.

(b) Adjusted average assets used for the calculation of Tier 1 leverage ratio.

(c) Off-balance sheet exposures are calculated as the average of the three month-end spot balances during the reporting quarter.

Refer to Note 27 for JPMorgan Chase Bank, N.A.'s SLR.

Line of business equity

Each business segment is allocated capital by taking into consideration a variety of factors including capital levels of similarly rated peers and applicable regulatory capital requirements. ROE is measured and internal targets for expected returns are established as key measures of a business segment's performance.

The Firm's allocation methodology incorporates Basel III Standardized RWA, Basel III Advanced RWA, the GSIB surcharge, and a simulation of capital in a severe stress environment. As of January 1, 2021, the Firm has changed its line of business capital allocations primarily as a result of changes in exposures for each LOB and an increase in the relative risk weighting toward Standardized RWA. The assumptions and methodologies used to allocate capital are periodically assessed and as a result, the capital allocated to the LOBs may change from time to time.

The following table presents the capital allocated to each business segment.

Line of business equity (Allocated capital)

		December 31,	
(in billions)	**January 1, 2021**	2020	2019
Consumer & Community Banking	**$ 50.0**	$ 52.0	$ 52.0
Corporate & Investment Bank	**83.0**	80.0	80.0
Commercial Banking	**24.0**	22.0	22.0
Asset & Wealth Management	**14.0**	10.5	10.5
Corporate	**78.3**	84.8	69.8
Total common stockholders' equity	**$ 249.3**	$ 249.3	$ 234.3

Capital actions

Common stock dividends

The Firm's common stock dividends are planned as part of the Capital Management governance framework in line with the Firm's capital management objectives.

The Firm's quarterly common stock dividend is currently $0.90 per share. The Firm's dividends are subject to the Board of Directors' approval on a quarterly basis.

Refer to Note 21 and Note 26 for information regarding dividend restrictions.

The following table shows the common dividend payout ratio based on net income applicable to common equity.

Year ended December 31,	**2020**	2019	2018
Common dividend payout ratio	**40 %**	31 %	30 %

Common stock

On March 15, 2020, in response to the economic disruptions caused by the COVID-19 pandemic, the Firm temporarily suspended repurchases of its common stock. Subsequently, the Federal Reserve directed all large banks, including the Firm, to discontinue net share repurchases through the end of 2020. On December 18, 2020, the Federal Reserve announced that all large banks, including the Firm, could resume share repurchases commencing in the first quarter of 2021. As directed by the Federal Reserve, total net repurchases and common stock dividends in the first quarter of 2021 are restricted and cannot exceed the average of the Firm's net income for the four preceding calendar quarters. The Firm's Board of Directors has authorized a new common share repurchase program for up to $30 billion.

The following table sets forth the Firm's repurchases of common stock for the years ended December 31, 2020, 2019 and 2018.

Year ended December 31, (in millions)	**2020**	2019	2018
Total number of shares of common stock repurchased	**50.0**	213.0	181.5
Aggregate purchase price of common stock repurchases	**$ 6,397**	$ 24,121	$ 19,983

The authorization to repurchase common shares is utilized at management's discretion, and the timing of purchases and the exact amount of common shares that may be repurchased is subject to various factors, including market conditions; legal and regulatory considerations affecting the amount and timing of repurchase activity; the Firm's capital position (taking into account goodwill and intangibles); internal capital generation; and alternative investment opportunities. The repurchase program does not include specific price targets or timetables; may be suspended by management at any time; and may be executed through open market purchases or privately negotiated transactions, or utilizing Rule 10b5-1 plans, which are written trading plans that the Firm may enter into from time to time under Rule 10b5-1 of the Securities Exchange Act of 1934 and which allow the Firm to repurchase its common shares during periods when it may otherwise not be repurchasing common shares – for example, during internal trading blackout periods.

Refer to Part II, Item 5: Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities on page 34 of the 2020 Form 10-K for additional information regarding repurchases of the Firm's equity securities.

Preferred stock

Preferred stock dividends declared were $1.6 billion for the year ended December 31, 2020.

The Firm has not issued or redeemed any preferred stock since the first quarter of 2020. Refer to Note 21 for additional information on the Firm's preferred stock, including the issuance and redemption of preferred stock.

Subordinated Debt

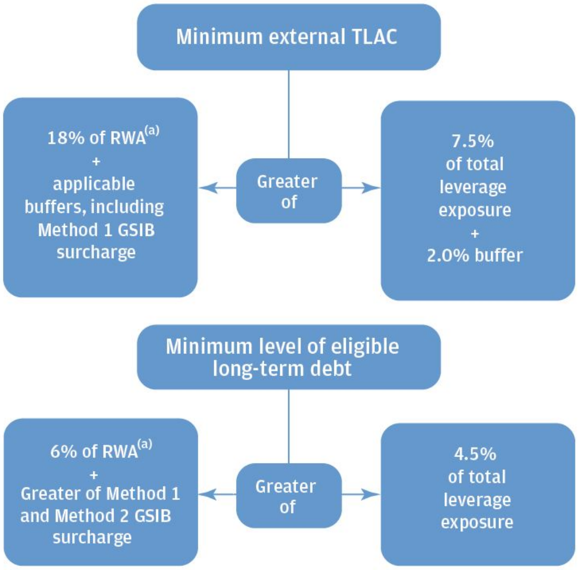
On May 13, 2020, the Firm issued $3.0 billion of fixed-to-floating rate subordinated notes due 2031. Refer to Long-term funding and issuance on page 107 and Note 20 for additional information.

Other capital requirements

Total Loss-Absorbing Capacity

The Federal Reserve's TLAC rule requires the U.S. GSIB top-tier holding companies, including the Firm, to maintain minimum levels of external TLAC and eligible long-term debt.

The minimum external TLAC and the minimum level of eligible long-term debt requirements are shown below:



(a) RWA is the greater of Standardized and Advanced compared to their respective minimum capital ratios.

Failure to maintain TLAC equal to or in excess of the regulatory minimum plus applicable buffers will result in limitations to the amount of capital that the Firm may distribute, such as through dividends and common share repurchases.

The following table presents the TLAC and external long-term debt minimum requirements including applicable regulatory buffers, as of December 31, 2020 and 2019.

	Minimum Requirements
TLAC to RWA	23.0 %
TLAC to leverage exposure	9.5
External long-term debt to RWA	9.5
External long-term debt to leverage	4.5

Effective January 1, 2021, Method 1 GSIB surcharge is 2.0% (down from 2.5%). As a result, the Firm's TLAC to RWA requirement will become 22.5%. Refer to Risk-based Capital Regulatory Minimums on pages 94-95 for further information on the GSIB surcharge.

The following table presents the eligible external TLAC and eligible LTD amounts, as well as a representation of the amounts as a percentage of the Firm's total RWA and total leverage exposure applying the impact of the CECL capital transition provisions as of December 31, 2020 and 2019.

	December 31, 2020		December 31, 2019	
(in billions, except ratio)	External TLAC	LTD	External TLAC	LTD
Total eligible amount	$ 421.0	$ 181.4	$ 386.4	$ 161.8
% of RWA	27.0 %	11.6 %	25.5 %	10.7 %
Surplus/ (shortfall)	$ 62.1	$ 33.1	$ 37.7	$ 17.8
% of total leverage exposure	12.4 %	5.3 %	11.3 %	4.7 %
Surplus/ (shortfall)	$ 97.9	$ 28.3	$ 61.2	$ 7.8

Refer to Part I, Item 1A: Risk Factors on pages 8-32 of the 2020 Form 10-K for information on the financial consequences to holders of the Firm's debt and equity securities in a resolution scenario.

Broker-dealer regulatory capital

J.P. Morgan Securities

JPMorgan Chase's principal U.S. broker-dealer subsidiary is J.P. Morgan Securities. J.P. Morgan Securities is subject to Rule 15c3-1 under the Securities Exchange Act of 1934 (the "Net Capital Rule"). J.P. Morgan Securities is also registered as a futures commission merchant and is subject to regulatory capital requirements, including those imposed by the SEC, Commodity Futures Trading Commission ("CFTC"), Financial Industry Regulatory Authority ("FINRA") and the National Futures Association ("NFA").

J.P. Morgan Securities has elected to compute its minimum net capital requirements in accordance with the "Alternative Net Capital Requirements" of the Net Capital Rule.

The following table presents J.P. Morgan Securities' net capital:

December 31, 2020 (in millions)	Actual[(a)]	Minimum
Net Capital	$ 27,651	$ 5,024

(a) Net capital reflects the exclusion of assets purchased from money market mutual fund clients pursuant to nonrecourse advances provided under the MMLF.

In addition to its alternative minimum net capital requirements, J.P. Morgan Securities is required to hold "tentative net capital" in excess of $1.0 billion and is also required to notify the SEC in the event that its tentative net capital is less than $5.0 billion. Tentative net capital is net capital before deducting market and credit risk charges as defined by the Net Capital Rule. As of December 31, 2020, J.P. Morgan Securities maintained tentative net capital in excess of the minimum and notification requirements.

J.P. Morgan Securities plc

J.P. Morgan Securities plc is a wholly-owned subsidiary of JPMorgan Chase Bank, N.A. and has authority to engage in banking, investment banking and broker-dealer activities. J.P. Morgan Securities plc is jointly regulated by the U.K. Prudential Regulation Authority ("PRA") and the Financial Conduct Authority ("FCA"). J.P. Morgan Securities plc is subject to the European Union Capital Requirements Regulation and the PRA capital rules, each of which implement Basel III and thereby subject J.P. Morgan Securities plc to its requirements. Effective January 1, 2021, J.P. Morgan Securities plc is subject to the amended EU Capital Requirement Regulation, as adopted in the U.K.

The Bank of England requires, on a transitional basis, that U.K. banks, including U.K. regulated subsidiaries of overseas groups, maintain a minimum requirement for own funds and eligible liabilities ("MREL"). As of December 31, 2020, J.P. Morgan Securities plc was compliant with the requirements of the MREL rule.

The following table presents J.P. Morgan Securities plc's capital metrics:

December 31, 2020 (in millions, except ratios)	Estimated	Minimum ratios
Total capital	$ 55,156	
CET1 ratio	17.9 %	4.5 %
Total capital ratio	22.8 %	8.0 %

LIQUIDITY RISK MANAGEMENT

Liquidity risk is the risk that the Firm will be unable to meet its contractual and contingent financial obligations as they arise or that it does not have the appropriate amount, composition and tenor of funding and liquidity to support its assets and liabilities.

Liquidity risk oversight

The Firm has a Liquidity Risk Oversight function whose primary objective is to provide oversight of liquidity risk across the Firm. Liquidity Risk Oversight's responsibilities include:

- Defining, monitoring and reporting liquidity risk metrics;
- Establishing and monitoring limits and indicators, including liquidity risk appetite;
- Developing a process to classify, monitor and report limit breaches;
- Performing an independent review of liquidity risk management processes;
- Monitoring and reporting internal Firmwide and legal entity liquidity stress tests as well as regulatory defined liquidity stress tests;
- Approving or escalating for review new or updated liquidity stress assumptions; and
- Monitoring liquidity positions, balance sheet variances and funding activities;

Liquidity management

The primary objectives of the Firm's liquidity management are to:

- Ensure that the Firm's core businesses and material legal entities are able to operate in support of client needs and meet contractual and contingent financial obligations through normal economic cycles as well as during stress events, and
- Manage an optimal funding mix and availability of liquidity sources.

As part of the Firm's overall liquidity management strategy, the Firm manages liquidity and funding using a centralized, global approach in order to:

- Optimize liquidity sources and uses;
- Monitor exposures;
- Identify constraints on the transfer of liquidity between the Firm's legal entities; and
- Maintain the appropriate amount of surplus liquidity at a Firmwide and legal entity level, where relevant.

In the context of the Firm's liquidity management, Treasury and CIO is responsible for:

- Analyzing and understanding the liquidity characteristics of the assets and liabilities of the Firm, LOBs and legal entities, taking into account legal, regulatory, and operational restrictions;
- Developing internal liquidity stress testing assumptions;
- Defining and monitoring Firmwide and legal entity-specific liquidity strategies, policies, reporting and contingency funding plans;
- Managing liquidity within the Firm's approved liquidity risk appetite tolerances and limits;
- Managing compliance with regulatory requirements related to funding and liquidity risk; and
- Setting transfer pricing in accordance with underlying liquidity characteristics of balance sheet assets and liabilities as well as certain off-balance sheet items.

Governance

Committees responsible for liquidity governance include the Firmwide ALCO as well as LOB and regional ALCOs, the Treasurer Committee, and the CTC Risk Committee. In addition, the Board Risk Committee reviews and recommends to the Board of Directors, for formal approval, the Firm's liquidity risk tolerances, liquidity strategy, and liquidity policy. Refer to Firmwide Risk Management on pages 85-89 for further discussion of ALCO and other risk-related committees.

Internal stress testing

Liquidity stress tests are intended to ensure that the Firm has sufficient liquidity under a variety of adverse scenarios, including scenarios analyzed as part of the Firm's resolution and recovery planning. Stress scenarios are produced for JPMorgan Chase & Co. ("Parent Company") and the Firm's material legal entities on a regular basis, and other stress tests are performed in response to specific market events or concerns. Liquidity stress tests assume all of the Firm's contractual financial obligations are met and take into consideration:

- Varying levels of access to unsecured and secured funding markets,
- Estimated non-contractual and contingent cash outflows, and
- Potential impediments to the availability and transferability of liquidity between jurisdictions and material legal entities such as regulatory, legal or other restrictions.

Liquidity outflow assumptions are modeled across a range of time horizons and currency dimensions and contemplate both market and idiosyncratic stresses.

Results of stress tests are considered in the formulation of the Firm's funding plan and assessment of its liquidity position. The Parent Company acts as a source of funding for the Firm through equity and long-term debt issuances, and its intermediate holding company, JPMorgan Chase Holdings LLC (the "IHC") provides funding support to the ongoing operations of the Parent Company and its subsidiaries. The Firm maintains liquidity at the Parent Company, IHC, and operating subsidiaries at levels sufficient to comply with liquidity risk tolerances and minimum liquidity requirements, and to manage through periods of stress when access to normal funding sources may be disrupted.

Contingency funding plan

The Firm's Contingency Funding Plan ("CFP") sets out the strategies for addressing and managing liquidity resource needs during a liquidity stress event and incorporates liquidity risk limits, indicators and risk appetite tolerances that make up Liquidity Escalation Points. The CFP also identifies the alternative contingent funding and liquidity resources available to the Firm and its legal entities in a period of stress.

Liquidity Coverage Ratio

The LCR rule requires that the Firm and JPMorgan Chase Bank, N.A. maintain an amount of eligible HQLA that is sufficient to meet its estimated total net cash outflows over a prospective 30 calendar-day period of significant stress. Eligible HQLA, for purposes of calculating the LCR, is the amount of unencumbered HQLA that satisfy certain operational considerations as defined in the LCR rule. HQLA primarily consist of cash and certain high-quality liquid securities as defined in the LCR rule.

Under the LCR rule, the amount of eligible HQLA held by JPMorgan Chase Bank, N.A. that is in excess of its stand-alone 100% minimum LCR requirement, and that is not transferable to non-bank affiliates, must be excluded from the Firm's reported eligible HQLA.

Estimated net cash outflows are based on standardized stress outflow and inflow rates prescribed in the LCR rule, which are applied to the balances of the Firm's assets, sources of funds, and obligations. The LCR for both the Firm and JPMorgan Chase Bank, N.A. is required to be a minimum of 100%.

The following table summarizes the Firm and JPMorgan Chase Bank, N.A.'s average LCR for the three months ended December 31, 2020, September 30, 2020 and December 31, 2019 based on the Firm's interpretation of the LCR framework.

	Three months ended		
Average amount (in millions)	**December 31, 2020**	September 30, 2020	December 31, 2019
JPMorgan Chase & Co.:			
Eligible HQLA			
Eligible cash[(a)]	**$ 455,612**	$ 458,336	$ 203,296
Eligible securities[(b)(c)]	**241,447**	211,841	341,990
Total eligible HQLA[(d)]	**$ 697,059**	$ 670,177	$ 545,286
Net cash outflows	**$ 634,037**	$ 587,811	$ 469,402
LCR	**110 %**	114 %	116 %
Net excess eligible HQLA[(d)]	**$ 63,022**	$ 82,366	$ 75,884
JPMorgan Chase Bank, N.A.:			
LCR	**160 %**	157 %	116 %
Net excess eligible HQLA	**$ 401,903**	$ 366,096	$ 79,483

(a) Represents cash on deposit at central banks, primarily the Federal Reserve Banks.
(b) Predominantly U.S. Treasuries, U.S. GSE and government agency MBS, and sovereign bonds net of applicable haircuts under the LCR rule.
(c) Eligible HQLA securities may be reported in securities borrowed or purchased under resale agreements, trading assets, or investment securities on the Firm's Consolidated balance sheets.
(d) Excludes average excess eligible HQLA at JPMorgan Chase Bank, N.A. that are not transferable to non-bank affiliates.

The Firm's average LCR decreased during the three months ended December 31, 2020, compared with the three-month period ended September 30, 2020, predominantly driven by a decrease in cash from long-term debt maturities, including the early termination of certain of the Firm's debt at the end of the third quarter 2020.

The Firm's average LCR decreased during the three months ended December 31, 2020, compared with the prior year period primarily due to the relative impact on net cash outflows from the significant increase in deposits as well as elevated market activities in the CIB.

JPMorgan Chase Bank, N.A.'s average LCR increased during the three months ended December 31, 2020, compared with both the three month periods ended September 30, 2020 and December 31, 2019 primarily due to growth in deposits. Deposits continued to increase in the fourth quarter primarily driven by the COVID-19 pandemic and the related effect of certain government actions. The increase in excess liquidity in JPMorgan Chase Bank, N.A. is excluded from the Firm's reported LCR under the LCR rule.

The Firm's average LCR fluctuates from period to period, due to changes in its eligible HQLA and estimated net cash outflows as a result of ongoing business activity. Refer to the Firm's U.S. LCR Disclosure reports, which are available on the Firm's website for a further discussion of the Firm's LCR.

Other liquidity sources

In addition to the assets reported in the Firm's eligible HQLA above, the Firm had unencumbered marketable securities, such as equity and debt securities, that the Firm believes would be available to raise liquidity. This includes securities included as part of the excess eligible HQLA at JPMorgan Chase Bank, N.A. that are not transferable to non-bank affiliates. The fair value of these securities was approximately $740 billion and $315 billion as of December 31, 2020 and 2019, respectively, although the amount of liquidity that could be raised would be dependent on prevailing market conditions. The fair value increased compared to December 31, 2019, due to an increase in excess eligible HQLA at JPMorgan Chase Bank, N.A. which was primarily a result of increased deposits.

The Firm also had available borrowing capacity at FHLBs and the discount window at the Federal Reserve Bank as a result of collateral pledged by the Firm to such banks of approximately $307 billion and $322 billion as of December 31, 2020 and 2019, respectively. This borrowing capacity excludes the benefit of cash and securities reported in the Firm's eligible HQLA or other unencumbered securities that are currently pledged at the Federal Reserve Bank discount window and other central banks. Available borrowing capacity decreased from December 31, 2019 primarily due to lower pledged credit card receivable balances driven by the COVID-19 pandemic and a decrease in pledged mortgage collateral as a result of paydown and maturity activity. Although available, the Firm does not view this borrowing capacity at the Federal Reserve Bank discount window and the other central banks as a primary source of liquidity.

NSFR

The net stable funding ratio ("NSFR") is a liquidity requirement for large banking organizations that is intended to measure the adequacy of "available" and "required" amounts of stable funding over a one-year horizon. On October 20, 2020, the federal banking agencies issued a final NSFR rule under which large banking organizations such as the Firm will be required to maintain an NSFR of at least 100% on an ongoing basis. The final NSFR rule will become effective on July 1, 2021, and the Firm will be required to publicly disclose its quarterly average NSFR semi-annually beginning in 2023.

As of December 31, 2020 the Firm estimates that it was compliant with the 100% minimum NSFR based on its current understanding of the final rule.

Funding

Sources of funds

Management believes that the Firm's unsecured and secured funding capacity is sufficient to meet its on- and off-balance sheet obligations.

The Firm funds its global balance sheet through diverse sources of funding including stable deposits, secured and unsecured funding in the capital markets and stockholders' equity. Deposits are the primary funding source for JPMorgan Chase Bank, N.A. Additionally, JPMorgan Chase Bank, N.A. may also access funding through short- or long-term secured borrowings, through the issuance of unsecured long-term debt, or from borrowings from the Parent Company or the IHC. The Firm's non-bank subsidiaries are primarily funded from long-term unsecured borrowings and short-term secured borrowings, primarily securities loaned or sold under repurchase agreements. Excess funding is invested by Treasury and CIO in the Firm's investment securities portfolio or deployed in cash or other short-term liquid investments based on their interest rate and liquidity risk characteristics.

Deposits

The table below summarizes, by LOB and Corporate, the period-end and average deposit balances as of and for the years ended December 31, 2020 and 2019.

As of or for the year ended December 31, (in millions)	2020	2019	Average 2020	Average 2019
Consumer & Community Banking	**$ 958,706**	$ 723,418 [a]	**$ 851,390**	$ 698,378 [a]
Corporate & Investment Bank	**702,215**	511,905 [a]	**655,095**	515,938 [a]
Commercial Banking	**284,263**	184,115	**237,645**	172,666
Asset & Wealth Management	**198,755**	142,740 [a]	**161,955**	135,265 [a]
Corporate	**318**	253	**666**	820
Total Firm	**$ 2,144,257**	$ 1,562,431	**$ 1,906,751**	$ 1,523,067

(a) In the fourth quarter of 2020, the Firm realigned certain wealth management clients from AWM to the J.P. Morgan Wealth Management business unit within CCB. In the first quarter of 2020, the Merchant Services business was realigned from CCB to CIB as part of the Firm's Wholesale Payments business. Prior-period amounts have been revised to conform with the current presentation.

Deposits provide a stable source of funding and reduce the Firm's reliance on the wholesale funding markets. A significant portion of the Firm's deposits are consumer deposits and wholesale operating deposits, which are both considered to be stable sources of liquidity. Wholesale operating deposits are considered to be stable sources of liquidity because they are generated from customers that maintain operating service relationships with the Firm.

The table below shows the loan and deposit balances, the loans-to-deposits ratios, and deposits as a percentage of total liabilities, as of December 31, 2020 and 2019.

As of December 31, (in billions except ratios)	2020	2019
Deposits	**$ 2,144.3**	$ 1,562.4
Deposits as a % of total liabilities	**69 %**	64 %
Loans	**1,012.9**	997.6
Loans-to-deposits ratio	**47 %**	64 %

The Firm believes that average deposit balances are generally more representative of deposit trends than period-end deposit balances, over time. However, during periods of market disruption those trends could be affected.

Average deposits increased for the year ended December 31, 2020, reflecting significant inflows across the LOBs primarily driven by the impact of the COVID-19 pandemic and the related effect of certain government actions. In the wholesale businesses, while the inflows principally occurred in March as clients sought to remain liquid as a result of market conditions, balances continued to increase through the end of 2020. In CCB, the increase was driven by lower spending and higher cash balances across both consumer and small business customers, as well as growth from existing and new accounts.

Refer to the discussion of the Firm's Business Segment Results and the Consolidated Balance Sheets Analysis on pages 65–84 and pages 57-58, respectively, for further information on deposit and liability balance trends.

The following table summarizes short-term and long-term funding, excluding deposits, as of December 31, 2020 and 2019, and average balances for the years ended December 31, 2020 and 2019. Refer to the Consolidated Balance Sheets Analysis on pages 57-58 and Note 20 for additional information.

Sources of funds (excluding deposits)

As of or for the year ended December 31, (in millions)	2020	2019	Average 2020	Average 2019
Commercial paper	**$ 12,031**	$ 14,754	**$ 12,129**	$ 22,977
Other borrowed funds	**8,510**	7,544	**9,198**	10,369
Total short-term unsecured funding	**$ 20,541**	$ 22,298	**$ 21,327**	$ 33,346
Securities sold under agreements to repurchase[(a)]	**$ 207,877**	$ 175,709	**$ 246,354**	$ 217,807
Securities loaned[(a)]	**4,886**	5,983	**6,536**	8,816
Other borrowed funds[(b)]	**24,667**	18,622	**23,812**	26,050
Obligations of Firm-administered multi-seller conduits[(c)]	**10,523**	9,223	**11,430**	10,929
Total short-term secured funding	**$ 247,953**	$ 209,537	**$ 288,132**	$ 263,602
Senior notes	**$ 166,089**	$ 166,185	**$ 171,509**	$ 168,546
Subordinated debt	**21,608**	17,591	**20,789**	17,387
Structured notes[(d)]	**75,325**	74,724	**73,056**	65,487
Total long-term unsecured funding	**$ 263,022**	$ 258,500	**$ 265,354**	$ 251,420
Credit card securitization[(c)]	**$ 4,943**	$ 6,461	**$ 5,520**	$ 9,707
FHLB advances	**14,123**	28,635	**27,076**	34,143
Other long-term secured funding[(e)]	**4,540**	4,363	**4,460**	4,643
Total long-term secured funding	**$ 23,606**	$ 39,459	**$ 37,056**	$ 48,493
Preferred stock[(f)]	**$ 30,063**	$ 26,993	**$ 29,899**	$ 27,511
Common stockholders' equity[(f)]	**$ 249,291**	$ 234,337	**$ 236,865**	$ 232,907

(a) Primarily consists of short-term securities loaned or sold under agreements to repurchase.
(b) Effective March 2020, includes nonrecourse advances provided under the MMLF.
(c) Included in beneficial interests issued by consolidated variable interest entities on the Firm's Consolidated balance sheets.
(d) Includes certain TLAC-eligible long-term unsecured debt issued by the Parent Company.
(e) Includes long-term structured notes which are secured.
(f) Refer to Capital Risk Management on pages 91-101, Consolidated statements of changes in stockholders' equity on page 165, Note 21 and Note 22 for additional information on preferred stock and common stockholders' equity.

Short-term funding

The Firm's sources of short-term secured funding primarily consist of securities loaned or sold under agreements to repurchase. These instruments are secured predominantly by high-quality securities collateral, including government-issued debt and U.S. GSE and government agency MBS. Securities sold under agreements to repurchase increased at December 31, 2020, compared with December 31, 2019, reflecting higher secured financing of AFS investment securities in Treasury and CIO, as well as trading assets in CIB, partially offset by a decline in client-driven market-making activities in CIB, including the Firm's non-participation in the Federal Reserve's open market operations.

The balances associated with securities loaned or sold under agreements to repurchase fluctuate over time due to investment and financing activities of clients, the Firm's demand for financing, the ongoing management of the mix of the Firm's liabilities, including its secured and unsecured financing (for both the investment securities and market-making portfolios), and other market and portfolio factors.

As of December 31, 2020, the Firm participated in the MMLF government facility. The secured nonrecourse advances under the MMLF are included in other borrowed funds. Refer to Capital Risk Management on pages 91-101 for additional information on the MMLF.

The Primary Dealer Credit Facility ("PDCF") was established by the Federal Reserve on March 20, 2020. Under the PDCF, the Federal Reserve Bank of New York ("FRBNY") provides collateralized financing on a term basis to primary dealers. These financing transactions were reported as securities sold under agreements to repurchase. The Firm participated in the PDCF in the first quarter of 2020, and ceased its participation in May 2020 as the secured financing market normalized.

The Firm's sources of short-term unsecured funding consist of other borrowed funds and issuance of wholesale commercial paper. The decrease in short-term unsecured funding at December 31, 2020, from December 31, 2019 and for the average year ended December 31, 2020 compared to the prior year period, was due to lower net commercial paper issuance primarily for short-term liquidity management.

Long-term funding and issuance

Long-term funding provides an additional source of stable funding and liquidity for the Firm. The Firm's long-term funding plan is driven primarily by expected client activity, liquidity considerations, and regulatory requirements, including TLAC. Long-term funding objectives include maintaining diversification, maximizing market access and optimizing funding costs. The Firm evaluates various funding markets, tenors and currencies in creating its optimal long-term funding plan.

The significant majority of the Firm's long-term unsecured funding is issued by the Parent Company to provide flexibility in support of both bank and non-bank subsidiary funding needs. The Parent Company advances substantially all net funding proceeds to its subsidiary, the IHC. The IHC does not issue debt to external counterparties. The following table summarizes long-term unsecured issuance and maturities or redemptions for the years ended December 31, 2020 and 2019. Refer to Note 20 for additional information on long-term debt.

Long-term unsecured funding

Year ended December 31,	2020	2019	2020	2019
(Notional in millions)	Parent Company		Subsidiaries	
Issuance				
Senior notes issued in the U.S. market	**$ 25,500**	$ 14,000	**$ 60**	$ 1,750
Senior notes issued in non-U.S. markets	**1,355**	5,867	**–**	–
Total senior notes	**26,855**	19,867	**60**	1,750
Subordinated debt	**3,000**	–	**–**	–
Structured notes[(a)]	**7,596**	5,844	**24,185**	33,563
Total long-term unsecured funding – issuance	**$ 37,451**	$ 25,711	**$ 24,245**	$ 35,313
Maturities/redemptions				
Senior notes	**$ 28,719**	$ 18,098	**$ 7,701**	$ 5,367
Subordinated debt	**135**	183	**–**	–
Structured notes	**5,340**	2,944	**30,002**	19,271
Total long-term unsecured funding – maturities/redemptions	**$ 34,194**	$ 21,225	**$ 37,703**	$ 24,638

(a) Includes certain TLAC-eligible long-term unsecured debt issued by the Parent Company.

The Firm can also raise secured long-term funding through securitization of consumer credit card loans and through FHLB advances. The following table summarizes the securitization issuance and FHLB advances and their respective maturities or redemptions for the years ended December 31, 2020 and 2019.

Long-term secured funding

Year ended December 31,	Issuance		Maturities/Redemptions	
(in millions)	2020	2019	2020	2019
Credit card securitization	**$ 1,000**	$ –	**$ 2,525**	$ 6,975
FHLB advances	**15,000**	–	**29,509**	15,817
Other long-term secured funding[(a)]	**1,130**	204	**1,048**	927
Total long-term secured funding	**$ 17,130**	$ 204	**$ 33,082**	$ 23,719

(a) Includes long-term structured notes which are secured.

The Firm's wholesale businesses also securitize loans for client-driven transactions; those client-driven loan securitizations are not considered to be a source of funding for the Firm and are not included in the table above. Refer to Note 14 for a further description of client-driven loan securitizations.

Credit ratings

The cost and availability of financing are influenced by credit ratings. Reductions in these ratings could have an adverse effect on the Firm's access to liquidity sources, increase the cost of funds, trigger additional collateral or funding requirements and decrease the number of investors and counterparties willing to lend to the Firm. The nature and magnitude of the impact of ratings downgrades depends on numerous contractual and behavioral factors, which the Firm believes are incorporated in its liquidity risk and stress testing metrics. The Firm believes that it maintains sufficient liquidity to withstand a potential decrease in funding capacity due to ratings downgrades.

Additionally, the Firm's funding requirements for VIEs and other third-party commitments may be adversely affected by a decline in credit ratings.

The credit ratings of the Parent Company and the Firm's principal bank and non-bank subsidiaries as of December 31, 2020 were as follows:

	JPMorgan Chase & Co.			JPMorgan Chase Bank, N.A.			J.P. Morgan Securities LLC J.P. Morgan Securities plc		
December 31, 2020	Long-term issuer	Short-term issuer	Outlook	Long-term issuer	Short-term issuer	Outlook	Long-term issuer	Short-term issuer	Outlook
Moody's Investors Service	A2	P-1	Stable	Aa2	P-1	Stable	Aa3	P-1	Stable
Standard & Poor's	A-	A-2	Stable	A+	A-1	Stable	A+	A-1	Stable
Fitch Ratings[(a)]	AA-	F1+	Negative	AA	F1+	Negative	AA	F1+	Negative

(a) On April 18, 2020, Fitch affirmed the credit ratings of the Parent Company and the Firm's principal bank and non-bank subsidiaries but revised the outlook on the credit ratings from stable to negative given expectations that credit fundamentals will deteriorate as a result of the COVID-19 pandemic.

JPMorgan Chase's unsecured debt does not contain requirements that would call for an acceleration of payments, maturities or changes in the structure of the existing debt, provide any limitations on future borrowings or require additional collateral, based on unfavorable changes in the Firm's credit ratings, financial ratios, earnings, or stock price.

Critical factors in maintaining high credit ratings include a stable and diverse earnings stream, strong capital and liquidity ratios, strong credit quality and risk management controls, and diverse funding sources. Rating agencies continue to evaluate economic and geopolitical trends, regulatory developments, future profitability, risk management practices, and litigation matters, as well as their broader ratings methodologies. Changes in any of these factors could lead to changes in the Firm's credit ratings.

Reputation risk is the risk that an action or inaction may negatively impact perception of the Firm's integrity and reduce confidence in the Firm's competence by various constituents, including clients, counterparties, customers, investors, regulators, employees, communities or the broader public.

Organization and management

Reputation Risk Management establishes the governance framework for managing reputation risk across the Firm. As reputation risk is inherently challenging to identify, manage, and quantify, a reputation risk management function is critical.

The Firm's reputation risk management function includes the following activities:

- Maintaining a Firmwide Reputation Risk Governance policy and standards consistent with the reputation risk framework
- Managing the governance infrastructure and processes that support consistent identification, escalation, management and monitoring of reputation risk issues Firmwide
- Providing guidance to LOB Reputation Risk Offices ("RRO"), as appropriate

The types of events that give rise to reputation risk are wide-ranging and could be introduced in various ways, including by the Firm's employees and the clients, customers and counterparties the Firm does business with. These events could result in financial losses, litigation and regulatory fines, as well as other damages to the Firm.

Governance and oversight

The Reputation Risk Governance policy establishes the principles for managing reputation risk for the Firm. It is the responsibility of employees in each LOB and Corporate to consider the reputation of the Firm when deciding whether to offer a new product, engage in a transaction or client relationship, enter a new jurisdiction, initiate a business process or other matters. Sustainability, social responsibility and environmental impacts are important considerations in assessing the Firm's reputation risk, and are a component of the Firm's reputation risk governance.

Reputation risk issues deemed material are escalated as appropriate.

CREDIT AND INVESTMENT RISK MANAGEMENT

Credit and investment risk is the risk associated with the default or change in credit profile of a client, counterparty or customer; or loss of principal or a reduction in expected returns on investments, including consumer credit risk, wholesale credit risk, and investment portfolio risk.

Credit risk management

Credit risk is the risk associated with the default or change in credit profile of a client, counterparty or customer. The Firm provides credit to a variety of customers, ranging from large corporate and institutional clients to individual consumers and small businesses. In its consumer businesses, the Firm is exposed to credit risk primarily through its home lending, credit card, auto, and business banking businesses. In its wholesale businesses, the Firm is exposed to credit risk through its underwriting, lending, market-making, and hedging activities with and for clients and counterparties, as well as through its operating services activities (such as cash management and clearing activities), and securities financing activities. The Firm is also exposed to credit risk through its investment securities portfolio and cash placed with banks.

Credit Risk Management monitors, measures and manages credit risk throughout the Firm and defines credit risk policies and procedures. The Firm's credit risk management governance includes the following activities:

- Maintaining a credit risk policy framework
- Monitoring, measuring and managing credit risk across all portfolio segments, including transaction and exposure approval
- Setting industry and geographic concentration limits, as appropriate, and establishing underwriting guidelines
- Assigning and managing credit authorities in connection with the approval of credit exposure
- Managing criticized exposures and delinquent loans and
- Estimating credit losses and ensuring appropriate credit risk-based capital management

Risk identification and measurement

The Credit Risk Management function monitors, measures, manages and limits credit risk across the Firm's businesses. To measure credit risk, the Firm employs several methodologies for estimating the likelihood of obligor or counterparty default. Methodologies for measuring credit risk vary depending on several factors, including type of asset (e.g., consumer versus wholesale), risk measurement parameters (e.g., delinquency status and borrower's credit score versus wholesale risk-rating) and risk management and collection processes (e.g., retail collection center versus centrally managed workout groups). Credit risk measurement is based on the probability of default of an obligor or counterparty, the loss severity given a default event and the exposure at default.

Based on these factors and the methodology and estimates described in Note 13 and Note 10, the Firm estimates credit losses for its exposures. The allowance for loan losses reflects credit losses related to the consumer and wholesale held-for-investment loan portfolios, the allowance for lending-related commitments reflects credit losses related to the Firm's lending-related commitments and the allowance for investment securities reflects the credit losses related to the Firm's HTM and AFS securities. Refer to Note 13, Note 10 and Critical Accounting Estimates used by the Firm on pages 152-155 for further information.

In addition, potential and unexpected credit losses are reflected in the allocation of credit risk capital and represent the potential volatility of actual losses relative to the established allowances for loan losses and lending-related commitments. The analyses for these losses include stress testing that considers alternative economic scenarios as described in the Stress testing section below.

Stress testing

Stress testing is important in measuring and managing credit risk in the Firm's credit portfolio. The stress testing process assesses the potential impact of alternative economic and business scenarios on estimated credit losses for the Firm. Economic scenarios and the underlying parameters are defined centrally, articulated in terms of macroeconomic factors and applied across the businesses. The stress test results may indicate credit migration, changes in delinquency trends and potential losses in the credit portfolio. In addition to the periodic stress testing processes, management also considers additional stresses outside these scenarios, including industry and country-specific stress scenarios, as necessary. The Firm uses stress testing to inform decisions on setting risk appetite both at a Firm and LOB level, as well as to assess the impact of stress on individual counterparties.

Risk monitoring and management

The Firm has developed policies and practices that are designed to preserve the independence and integrity of the approval and decision-making process of extending credit to ensure credit risks are assessed accurately, approved properly, monitored regularly and managed actively at both the transaction and portfolio levels. The policy framework establishes credit approval authorities, concentration limits, risk-rating methodologies, portfolio review parameters and guidelines for management of distressed exposures. In addition, certain models, assumptions and inputs used in evaluating and monitoring credit risk are independently validated by groups that are separate from the LOBs.

Consumer credit risk is monitored for delinquency and other trends, including any concentrations at the portfolio level, as certain of these trends can be modified through changes in underwriting policies and portfolio guidelines. Consumer Risk Management evaluates delinquency and other trends against business expectations, current and forecasted economic conditions, and industry benchmarks. Historical and forecasted economic performance and trends are incorporated into the modeling of estimated consumer credit losses and are part of the monitoring of the credit risk profile of the portfolio.

Wholesale credit risk is monitored regularly at an aggregate portfolio, industry, and individual client and counterparty level with established concentration limits that are reviewed and revised periodically as deemed appropriate by management. Industry and counterparty limits, as measured in terms of exposure and economic risk appetite, are subject to stress-based loss constraints. Wrong-way risk is the risk that exposure to a counterparty is positively correlated with the impact of a default by the same counterparty, which could cause exposure to increase at the same time as the counterparty's capacity to meet its obligations is decreasing.

Management of the Firm's wholesale credit risk exposure is accomplished through a number of means, including:

- Loan underwriting and credit approval process
- Loan syndications and participations
- Loan sales and securitizations
- Credit derivatives
- Master netting agreements, and
- Collateral and other risk-reduction techniques

In addition to Credit Risk Management, an independent Credit Review function is responsible for:

- Independently validating or changing the risk grades assigned to exposures in the Firm's wholesale credit portfolio, and assessing the timeliness of risk grade changes initiated by responsible business units; and
- Evaluating the effectiveness of business units' credit management processes, including the adequacy of credit analyses and risk grading/LGD rationales, proper monitoring and management of credit exposures, and compliance with applicable grading policies and underwriting guidelines.

Refer to Note 12 for further discussion of consumer and wholesale loans.

Risk reporting

To enable monitoring of credit risk and effective decision-making, aggregate credit exposure, credit quality forecasts, concentration levels and risk profile changes are reported regularly to senior members of Credit Risk Management. Detailed portfolio reporting of industry, clients, counterparties and customers, product and geography are prepared, and the appropriateness of the allowance for credit losses is reviewed by senior management at least on a quarterly basis. Through the risk reporting and governance structure, credit risk trends and limit exceptions are provided regularly to, and discussed with, risk committees, senior management and the Board of Directors.

CREDIT PORTFOLIO

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. The adoption resulted in a change in the accounting for PCI loans, which are considered PCD loans under CECL. In conjunction with the adoption of CECL, the Firm reclassified risk-rated loans and lending-related commitments from the consumer, excluding credit card portfolio segment to the wholesale portfolio segment, to align with the methodology applied when determining the allowance. Prior-period amounts have been revised to conform with the current presentation. Refer to Note 1 for further information.

The Firm has provided various forms of assistance to customers and clients impacted by the COVID-19 pandemic, including payment deferrals and covenant modifications. The majority of the Firm's COVID-19 related loan modifications have not been considered troubled debt restructurings ("TDRs") because:

- they represent short-term or other insignificant modifications, whether under the Firm's regular loan modification assessments or the IA Statement guidance, or
- the Firm has elected to apply the option to suspend the application of accounting guidance for TDRs provided by the CARES Act and extended by the Consolidated Appropriations Act.

To the extent that certain modifications do not meet any of the above criteria, the Firm accounts for them as TDRs. The Firm considers expected losses of principal and accrued interest associated with all COVID-19 related loan modifications in its allowance for credit losses. Refer to Business Developments on pages 50-51 for more information on customer and client assistance granted. Refer to Notes 12 and 13 for further information on the Firm's accounting policies on loan modifications and the allowance for credit losses.

The effectiveness of the Firm's actions in helping borrowers recover and in mitigating the Firm's credit losses remains uncertain in light of the unpredictable nature and duration of the COVID-19 pandemic. Assistance provided in response to the COVID-19 pandemic could delay the recognition of delinquencies, nonaccrual status, and net charge-offs for those customers and clients who would have otherwise moved into past due or nonaccrual status. Refer to Consumer Credit Portfolio on pages 114-120 and Wholesale Credit Portfolio on pages 121-131 for information on loan modifications as of December 31, 2020.

In the following tables, reported loans include loans retained (i.e., held-for-investment); loans held-for-sale; and certain loans accounted for at fair value. The following tables do not include loans which the Firm accounts for at fair value and classifies as trading assets; refer to Notes 2 and 3 for further information regarding these loans. Refer to Notes 12, 28, and 5 for additional information on the Firm's loans, lending-related commitments and derivative receivables, including the Firm's accounting policies.

Refer to Note 10 for information regarding the credit risk inherent in the Firm's investment securities portfolio; and refer to Note 11 for information regarding credit risk inherent in the securities financing portfolio. Refer to Consumer Credit Portfolio on pages 114-120 and Note 12 for further discussions of the consumer credit environment and consumer loans. Refer to Wholesale Credit Portfolio on pages 121-131 and Note 12 for further discussions of the wholesale credit environment and wholesale loans.

Total credit portfolio

December 31, (in millions)	Credit exposure 2020	Credit exposure 2019	Nonperforming[f][g] 2020	Nonperforming[f][g] 2019
Loans retained	**$ 960,506**	$ 945,601	**$ 8,782**	$ 3,983
Loans held-for-sale	**7,873**	7,064	**284**	7
Loans at fair value [a]	**44,474**	44,955	**1,507**	647
Total loans – reported	**1,012,853**	997,620	**10,573**	4,637
Derivative receivables	**79,630**	49,766	**56**	30
Receivables from customers[b]	**47,710**	33,706	**–**	–
Total credit-related assets	**1,140,193**	1,081,092	**10,629**	4,667
Assets acquired in loan satisfactions				
Real estate owned	**NA**	NA	**256**	344
Other	**NA**	NA	**21**	43
Total assets acquired in loan satisfactions	**NA**	NA	**277**	387
Lending-related commitments[a]	**1,165,688**	1,108,399	**577**	474
Total credit portfolio	**$ 2,305,881**	$ 2,189,491	**$ 11,483**	$ 5,528
Credit derivatives used in credit portfolio management activities[c][d]	**$ (22,239)**	$ (18,530)	**$ –**	$ –
Liquid securities and other cash collateral held against derivatives[e]	**(14,806)**	(13,052)	**NA**	NA

Year ended December 31, (in millions, except ratios)	2020	2019
Net charge-offs	**$ 5,259**	$ 5,629
Average retained loans	**958,303**	941,919
Net charge-off rates	**0.55 %**	0.60 %

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans, which resulted in a corresponding reclassification of certain off-balance sheet commitments. Prior-period amounts have been revised to conform with the current presentation.
(b) Receivables from customers reflect held-for-investment margin loans to brokerage clients in CIB, CCB and AWM; these are reported within accrued interest and accounts receivable on the Consolidated balance sheets.
(c) Represents the net notional amount of protection purchased and sold through credit derivatives used to manage both performing and nonperforming wholesale credit exposures; these derivatives do not qualify for hedge accounting under U.S. GAAP. Refer to Credit derivatives on page 131 and Note 5 for additional information.
(d) Prior-period amount has been revised to conform with the current presentation.
(e) In the fourth quarter of 2020, the Firm refined its approach for disclosing additional collateral held by the Firm that may be used as security when the fair value of the client's exposure is in the Firm's favor. Prior-period amounts have been revised to conform with the current presentation.
(f) At December 31, 2020 and 2019, nonperforming assets excluded mortgage loans 90 or more days past due and insured by U.S. government agencies of $874 million and $1.1 billion, respectively, and real estate owned ("REO") insured by U.S. government agencies of $9 million and $41 million, respectively. Prior-period amount of mortgage loans 90 or more days past due and insured by U.S. government agencies excluded from nonperforming assets has been revised to conform with the current presentation; refer to footnote (a) for additional information. These amounts have been excluded based upon the government guarantee. In addition, the Firm's policy is generally to exempt credit card loans from being placed on nonaccrual status as permitted by regulatory guidance.
(g) At December 31, 2020, nonperforming loans included $1.6 billion of PCD loans on nonaccrual status. Prior to the adoption of CECL, nonaccrual loans excluded PCI loans as the Firm recognized interest income on each pool of PCI loans as each of the pools was performing.

Paycheck Protection Program

The PPP, established by the CARES Act and implemented by the SBA, provided the Firm with delegated authority to process and originate PPP loans. When certain criteria are met, PPP loans are subject to forgiveness and the Firm will receive payment of the forgiveness amount from the SBA. PPP loans have a contractual term of two or five years and provide borrowers with an automatic payment deferral of principal and interest. Given that PPP loans are guaranteed by the SBA, the Firm does not expect to realize material credit losses on these loans. PPP processing fees are deferred and accreted into interest income over the contractual life of the loans, but may be accelerated upon forgiveness or prepayment. The impact on interest income related to PPP loans was not material for the year ended December 31, 2020.

The Firm was in the early stages of the PPP loan forgiveness process at December 31, 2020.

At December 31, 2020, the Firm had approximately $27 billion of loans under the PPP, of which $19 billion are in the consumer portfolio and $8 billion are in the wholesale portfolio.

CONSUMER CREDIT PORTFOLIO

The Firm's retained consumer portfolio consists primarily of residential real estate loans, credit card loans, scored auto and business banking loans, as well as associated lending-related commitments. The Firm's focus is on serving primarily the prime segment of the consumer credit market. Originated mortgage loans are retained in the residential real estate portfolio, securitized or sold to U.S. government agencies and U.S. government-sponsored enterprises; other types of consumer loans are typically retained on the balance sheet. Refer to Note 12 for further information on the consumer loan portfolio. Refer to Note 28 for further information on lending-related commitments.

In 2020, the allowance for credit losses increased, reflecting the deterioration in and uncertainty around the future macroeconomic environment as a result of the impact of the COVID-19 pandemic. Net charge-offs for the year ended December 31, 2020 decreased when compared to December 31, 2019, benefiting from payment assistance and government stimulus. The potential for increased infection rates and related lock downs, as well as the duration and effectiveness of government and other consumer relief measures remains uncertain which could have a longer term impact on delinquency rates and net charge-offs.

The following table presents consumer credit-related information with respect to the scored credit portfolio held in CCB, AWM, CIB and Corporate.

Consumer credit portfolio

As of or for the year ended December 31, (in millions, except ratios)	Credit exposure		Nonaccrual loans[j][k][l]		Net charge-offs/ (recoveries)		Net charge-off/ (recovery) rate[m]	
	2020	2019	**2020**	2019	**2020**	2019	**2020**	2019
Consumer, excluding credit card								
Residential real estate[a]	**$ 225,302**	$ 243,317	**$ 5,313**	$ 2,780	**$ (164)**	$ (92)	**(0.07)%**	(0.04)%
Auto and other[b][c][d]	**76,825**	51,682	**151**	$ 146	**338**	$ 456	**0.51** [d]	0.88
Total loans - retained	**302,127**	294,999	**5,464**	2,926	**174**	364	**0.06**	0.12
Loans held-for-sale	**1,305**	3,002	**—**	2	**NA**	NA	**NA**	NA
Loans at fair value[e][f]	**15,147**	19,816	**1,003**	438	**NA**	NA	**NA**	NA
Total consumer, excluding credit card loans	**318,579**	317,817	**6,467**	3,366	**174**	364	**0.06**	0.12
Lending-related commitments[g]	**57,319**	40,169						
Total consumer exposure, excluding credit card	**375,898**	357,986						
Credit Card								
Loans retained[h]	**143,432**	168,924	**NA**	NA	**4,286**	4,848	**2.93**	3.10
Loans held-for-sale	**784**	—	**NA**	NA	**NA**	NA	**NA**	NA
Total credit card loans	**144,216**	168,924	**NA**	NA	**4,286**	4,848	**2.93**	3.10
Lending-related commitments[g][i]	**658,506**	650,720						
Total credit card exposure[i]	**802,722**	819,644						
Total consumer credit portfolio[i]	**$ 1,178,620**	$ 1,177,630	**$ 6,467**	$ 3,366	**$ 4,460**	$ 5,212	**0.99 %**	1.11 %

(a) Includes scored mortgage and home equity loans held in CCB and AWM, and scored mortgage loans held in Corporate.
(b) At December 31, 2020 and 2019, excluded operating lease assets of $20.6 billion and $22.8 billion, respectively. These operating lease assets are included in other assets on the Firm's Consolidated balance sheets. Refer to Note 18 for further information.
(c) Includes scored auto and business banking loans and overdrafts.
(d) At December 31, 2020, included $19.2 billion of loans in Business Banking under the PPP. Given that PPP loans are guaranteed by the SBA, the Firm does not expect to realize material credit losses on these loans. Refer to Credit Portfolio on pages 112-113 for a further discussion of the PPP.
(e) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.
(f) Includes scored mortgage loans held in CCB and CIB.
(g) Credit card, home equity and certain business banking lending-related commitments represent the total available lines of credit for these products. The Firm has not experienced, and does not anticipate, that all available lines of credit would be used at the same time. For credit card commitments, and if certain conditions are met, home equity commitments and certain business banking commitments, the Firm can reduce or cancel these lines of credit by providing the borrower notice or, in some cases as permitted by law, without notice. Refer to Note 28 for further information.
(h) Includes billed interest and fees.
(i) Also includes commercial card lending-related commitments primarily in CB and CIB.
(j) At December 31, 2020 and 2019, nonaccrual loans excluded mortgage loans 90 or more days past due and insured by U.S. government agencies of $874 million and $1.1 billion, respectively. Prior-period amount of mortgage loans 90 or more days past due and insured by U.S. government agencies excluded from nonaccrual loans has been revised to conform with the current presentation; refer to footnote (e) for additional information. These amounts have been excluded from nonaccrual loans based upon the government guarantee. In addition, the Firm's policy is generally to exempt credit card loans from being placed on nonaccrual status, as permitted by regulatory guidance.
(k) At December 31, 2020, nonaccrual loans included $1.6 billion of PCD loans. Prior to the adoption of CECL, nonaccrual loans excluded PCI loans as the Firm recognized interest income on each pool of PCI loans as each of the pools was performing.
(l) Generally excludes loans under payment deferral programs offered in response to the COVID-19 pandemic. Includes loans to customers that have exited COVID-19 payment deferral programs and are 90 or more days past due, predominantly all of which were also at least 150 days past due and therefore considered collateral-dependent. Collateral-dependent loans are charged down to the lower of amortized cost or fair value of the underlying collateral less costs to sell.
(m) Average consumer loans held-for-sale and loans at fair value were $18.3 billion and $20.4 billion for the years ended December 31, 2020 and 2019, respectively. Prior-period amounts have been revised to conform with the current presentation; refer to footnote (e) for additional information. These amounts were excluded when calculating net charge-off/(recovery) rates.

Consumer assistance

In March 2020, the Firm began providing assistance to customers in response to the COVID-19 pandemic, predominantly in the form of payment deferrals.

As of December 31, 2020, the Firm had $10.7 billion of retained loans under payment deferral programs, which represented a decrease of approximately $1.5 billion from September 30, 2020 and $17.5 billion from June 30, 2020. During the fourth quarter of 2020, there were approximately $1.4 billion of new enrollments in payment deferral programs predominantly in residential real estate and credit card. Predominantly all borrowers that exited payment deferral programs are current. The Firm continues to monitor the credit risk associated with loans subject to payment deferrals throughout the deferral period and on an ongoing basis after the borrowers are required to resume making regularly scheduled payments and considers expected losses of principal and accrued interest on these loans in its allowance for credit losses.

	December 31, 2020			September 30, 2020	June 30, 2020	
(in millions, except ratios)	Loan balance	Percent of loan class balance[e]	Percent of accounts who exited payment deferral and are current	Loan balance	Loan balance	Type of assistance
Residential real estate[a][b]	**$ 10,106**	**4.5 %**	**95 %**	$ 11,458	$ 20,548	Rolling three month payment deferral up to one year; in most cases, deferred payments will be due at the end of the loan term
Auto and other[c]	**377**	**0.5**	**94**	457	3,357	• Auto: Currently offering one month payment deferral (initially offered three month payment deferral). Maturity date is extended by number of months deferred • Business Banking: Three month deferral with automatic deferment to either maturity (loan) or one year forward (line)
Credit card	**264**	**0.2**	**90** [f]	368	4,384	Currently offering deferral of one month minimum payment (initially offered three month minimum payment deferral). Interest continues to accrue during the deferral period and is added to the principal balance
Total consumer[d]	**$ 10,747**	**2.4 %**	**91 %**	$ 12,283	$ 28,289	

(a) Excludes $13.4 billion, $17.1 billion and $34.0 billion of third-party mortgage loans serviced at December 31, 2020, September 30, 2020 and June 30, 2020, respectively.
(b) The weighted average LTV ratio of residential real estate loans under payment deferral at December 31, 2020 was 57%.
(c) Excludes risk-rated business banking and auto dealer loans held in CCB and auto operating lease assets that were still under payment deferral programs as of December 31, 2020, September 30, 2020 and June 30, 2020. Auto operating lease asset payment assistance is currently offering one month payment deferral (initially offered three month payment deferral). Deferrals do not extend the term of the lease and all deferred payments are due at the end of the lease term.
(d) Includes $3.8 billion, $3.8 billion and $5.7 billion of loans that were accounted for as TDRs prior to payment deferral as of December 31, 2020, September 30, 2020 and June 30, 2020, respectively.
(e) Represents the unpaid principal balance of retained loans which were still under payment deferral programs, divided by the total unpaid principal balance of the respective loan classes retained loans.
(f) 85% of the balance that exited deferral were current at December 31, 2020.

Of the $10.7 billion of loans still under payment deferral programs as of December 31, 2020, approximately $4.0 billion were accounted for as TDRs, either because they were accounted for as TDRs prior to payment deferral, or because they did not qualify for or the Firm did not elect the option to suspend TDR accounting guidance provided by the CARES Act and extended by the Consolidated Appropriations Act. A portion of the remaining $6.7 billion of loans could become TDRs in future periods, depending on the nature and timing of further modifications or payment arrangements offered to these borrowers. If the remaining $6.7 billion of loans were considered TDRs, the Firm estimates that it would result in an increase in standardized RWA of as much as $2.5 billion.

Predominantly all borrowers, including those accounted for as TDRs, were current upon enrollment in payment deferral programs and are expected to exit payment deferral programs in a current status, either because no payments are contractually due during the deferral period or because payments originally contractually due during the deferral period will be due at maturity upon exit. For those borrowers that are unable to resume making payments in accordance with the original or modified contractual terms of their agreements upon exit from deferral programs, they will be placed on nonaccrual status in line with the Firm's nonaccrual policy, except for credit cards as permitted by regulatory guidance, and charged off or down in accordance with the Firm's charge-off policies. Refer to Note 12 for additional information on the Firm's nonaccrual and charge-off policies.

Consumer, excluding credit card

Portfolio analysis

Loan balances were flat from December 31, 2019 as PPP loan originations in Business Banking were offset by lower residential real estate loans, reflecting paydowns.

The following discussions provide information concerning individual loan products. Refer to Note 12 for further information about this portfolio, including information about delinquencies, loan modifications and other credit quality indicators.

Residential real estate: The residential real estate portfolio, including loans held-for-sale and loans at fair value, predominantly consists of prime mortgage loans and home equity lines of credit. The portfolio decreased from December 31, 2019 driven by paydowns largely offset by originations of prime mortgage loans that have been retained on the balance sheet. The 30+ delinquency rate decreased to 0.98% at December 31, 2020, from 1.35% at December 31, 2019, primarily due to payment assistance and government stimulus. Nonaccrual loans increased from December 31, 2019 due primarily to loans placed on nonaccrual status related to the impact of the COVID-19 pandemic as well as the adoption of CECL, as PCD loans became subject to nonaccrual treatment. Net recoveries for the year ended December 31, 2020 were higher when compared with the prior year as the current year benefited from a recovery on a loan sale.

The carrying value of home equity lines of credit outstanding was $23.7 billion at December 31, 2020. This amount included $8.6 billion of HELOCs that have recast from interest-only to fully amortizing payments or have been modified and $7.7 billion of interest-only balloon HELOCs, which primarily mature after 2030. The Firm manages the risk of HELOCs during their revolving period by closing or reducing the undrawn line to the extent permitted by law when borrowers are exhibiting a material deterioration in their credit risk profile.

At December 31, 2020 and 2019, the carrying value of interest-only residential mortgage loans were $25.6 billion and $22.5 billion, respectively. These loans have an interest-only payment period generally followed by an adjustable-rate or fixed-rate fully amortizing payment period to maturity and are typically originated as higher-balance loans to higher-income borrowers, predominantly in AWM. The net charge-off rate for the year ended December 31, 2020 was consistent with the rate of the broader residential mortgage portfolio as the performance of this portfolio is generally in line with the performance of the broader residential mortgage portfolio.

The following table provides a summary of the Firm's residential mortgage portfolio insured and/or guaranteed by U.S. government agencies, predominantly loans held-for-sale and loans at fair value. The Firm monitors its exposure to certain potential unrecoverable claim payments related to government-insured loans and considers this exposure in estimating the allowance for loan losses.

(in millions)	**December 31, 2020**	December 31, 2019
Current	**$ 669**	$ 1,432
30-89 days past due	**235**	704
90 or more days past due	**874**	1,090
Total government guaranteed loans[(a)]	**$ 1,778**	$ 3,226

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.

Geographic composition and current estimated loan-to-value ratio of residential real estate loans

At December 31, 2020, $146.6 billion, or 65% of the total retained residential real estate loan portfolio, excluding mortgage loans insured by U.S. government agencies, were concentrated in California, New York, Florida, Texas and Illinois, compared with $157.9 billion, or 65%, at December 31, 2019.

Average current estimated loan-to-value ("LTV") ratios have declined consistent with recent improvements in home prices, customer pay-downs, and charge-offs or liquidations of higher LTV loans.

Refer to Note 12 for information on the geographic composition and current estimated LTVs of the Firm's residential real estate loans.

Modified residential real estate loans

The following table presents information relating to modified retained residential real estate loans for which concessions have been granted to borrowers experiencing financial difficulty, which include both TDRs and modified loans accounted for as PCI loans prior to the adoption of CECL. The following table does not include loans with short-term or other insignificant modifications that are not considered concessions and, therefore, are not TDRs, or loans for which the Firm has elected to apply the option to suspend the application of accounting guidance for TDRs as provided by the CARES Act and extended by the Consolidated Appropriations Act. Refer to Note 12 for further information on modifications for the years ended December 31, 2020 and 2019.

(in millions)		December 31, 2020	December 31, 2019	
Retained loans[a]	$	15,406	5,926	
PCI loans		NA	12,372	[d]
Nonaccrual retained loans[b][c]	$	3,899	2,332	

(a) At December 31, 2020 and 2019, $7 million and $14 million, respectively, of loans modified subsequent to repurchase from Ginnie Mae in accordance with the standards of the appropriate government agency (i.e., Federal Housing Administration ("FHA"), U.S. Department of Veterans Affairs ("VA"), Rural Housing Service of the U.S. Department of Agriculture ("RHS")) are not included in the table above. When such loans perform subsequent to modification in accordance with Ginnie Mae guidelines, they are generally sold back into Ginnie Mae loan pools. Modified loans that do not re-perform become subject to foreclosure. Refer to Note 14 for additional information about sales of loans in securitization transactions with Ginnie Mae.
(b) At December 31, 2020 and 2019, nonaccrual loans included $3.0 billion and $1.9 billion, respectively, of TDRs for which the borrowers were less than 90 days past due. Refer to Note 12 for additional information about loans modified in a TDR that are on nonaccrual status.
(c) At December 31, 2020, nonaccrual loans included $1.3 billion of PCD loans. Prior to the adoption of CECL, nonaccrual loans excluded PCI loans as the Firm recognized interest income on each pool of PCI loans as each of the pools was performing.
(d) Amount represents the unpaid principal balance of modified PCI loans at December 31, 2019, which were moved to retained loans upon the adoption of CECL.

Auto and other: The auto and other loan portfolio predominantly consists of prime-quality scored auto and business banking loans, as well as overdrafts. The portfolio increased when compared with December 31, 2019, predominantly due to PPP loan originations of $21.9 billion in Business Banking of which $19.2 billion remained outstanding at December 31, 2020 as well as from growth in the auto portfolio from loan originations, partially offset by paydowns and charge-offs or liquidation of delinquent loans. The 30+ delinquency rate decreased to 0.60% at December 31, 2020, from 1.31% at December 31, 2019, primarily due to payment assistance and government stimulus, as well as PPP loan originations as these loans are all considered current. The scored auto portfolio net charge-off rates were 0.25% and 0.44% for the years ended December 31, 2020 and 2019, respectively. Auto charge-offs for the year ended December 31, 2020 benefited from payment assistance programs and high vehicle collateral values.

Nonperforming assets

The following table presents information as of December 31, 2020 and 2019, about consumer, excluding credit card, nonperforming assets.

Nonperforming assets[a]

December 31, (in millions)		2020		2019
Nonaccrual loans				
Residential real estate[b][c][d]	**$**	**6,316**	$	3,220
Auto and other		**151**		146
Total nonaccrual loans		**6,467**		3,366
Assets acquired in loan satisfactions				
Real estate owned[e]		**131**		229
Other		**21**		24
Total assets acquired in loan satisfactions		**152**		253
Total nonperforming assets	**$**	**6,619**	$	3,619

(a) At December 31, 2020 and 2019, nonperforming assets excluded mortgage loans 90 or more days past due and insured by U.S. government agencies of $874 million and $1.1 billion, respectively, and REO insured by U.S. government agencies of $9 million and $41 million, respectively. Prior-period amount of mortgage loans 90 or more days past due and insured by U.S. government agencies excluded from nonperforming assets has been revised to conform with the current presentation; refer to footnote (b) for additional information. These amounts have been excluded based upon the government guarantee.
(b) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.
(c) Generally excludes loans under payment deferral programs offered in response to the COVID-19 pandemic. Includes loans to customers that have exited COVID-19 payment deferral programs and are 90 or more days past due, predominantly all of which were also at least 150 days past due and therefore considered collateral-dependent. Collateral-dependent loans are charged down to the lower of amortized cost or fair value of the underlying collateral less costs to sell.
(d) At December 31, 2020, nonaccrual loans included $1.6 billion of PCD loans. Prior to the adoption of CECL, nonaccrual loans excluded PCI loans as the Firm recognized interest income on each pool of PCI loans as each of the pools was performing.
(e) Prior-period amount has been revised to conform with the current presentation.

Nonaccrual loans

The following table presents changes in consumer, excluding credit card, nonaccrual loans for the years ended December 31, 2020 and 2019.

Nonaccrual loan activity[a]

Year ended December 31, (in millions)		2020		2019
Beginning balance	$	**3,366**	$	3,853
Additions:				
PCD loans, upon adoption of CECL		**708**		NA
Other additions		**5,184** [c]		2,174
Total additions		**5,892**		**2,174**
Reductions:				
Principal payments and other[b]		**983**		1,167
Charge-offs		**390**		371
Returned to performing status		**1,024**		751
Foreclosures and other liquidations		**394**		372
Total reductions		**2,791**		2,661
Net changes		**3,101**		(487)
Ending balance	$	**6,467**	$	3,366

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.
(b) Other reductions includes loan sales.
(c) Includes loans to customers that have exited COVID-19 payment deferral programs and are 90 or more days past due, predominantly all of which were also at least 150 days past due and therefore considered collateral-dependent. Collateral-dependent loans are charged down to the lower of amortized cost or fair value of the underlying collateral less costs to sell.

Active and suspended foreclosure: Refer to Note 12 for information on loans that were in the process of active or suspended foreclosure.

Refer to Note 12 for further information about the consumer credit portfolio, including information about delinquencies, loan modifications and other credit quality indicators.

Purchased credit deteriorated ("PCD") loans

The following tables provide credit-related information for PCD loans, which were accounted for as PCI loans prior to the adoption of CECL. PCI loans are considered PCD loans under CECL and are subject to the Firm's nonaccrual and charge-off policies. PCD loans are now reported in the consumer, excluding credit card portfolio's residential real estate class. Refer to Note 1 for further information.

(in millions, except ratios)		December 31, 2020		December 31, 2019
Loan delinquency[a]				
Current	$	**16,036**	$	18,571
30-149 days past due		**432**		970
150 or more days past due[b]		**573**		822
Total PCD loans	$	**17,041**	$	20,363
% of 30+ days past due to total retained PCD loans		**5.90 %**		8.80 %
Nonaccrual loans[c]	$	**1,609**		NA

(in millions, except ratios)		Twelve months ended December 31, 2020
Net charge-offs	$	**74**
Net charge-off rate		**0.39 %**

(a) At December 31, 2020, loans under payment deferral programs offered in response to the COVID-19 pandemic which are still within their deferral period and performing according to their modified terms are generally not considered delinquent.
(b) Includes loans to customers that have exited COVID-19 payment deferral programs and are 150 or more days past due and therefore considered collateral-dependent. Collateral dependent loans are charged down to the lower of amortized cost or fair value of the underlying collateral less costs to sell.
(c) Includes loans to customers that have exited COVID-19 payment deferral programs and are 90 or more days past due, predominantly all of which were also at least 150 days past due and therefore considered collateral-dependent.

Credit card

Total credit card loans decreased from December 31, 2019 reflecting a decline in sales volume that began in March as a result of the impact of the COVID-19 pandemic. The December 31, 2020 30+ and 90+ day delinquency rates of 1.68% and 0.92%, respectively, decreased compared to the December 31, 2019 30+ and 90+ day delinquency rates of 1.87% and 0.95%, respectively. The delinquency rates were positively impacted by borrowers who received payment assistance and government stimulus. Net charge-offs decreased for the year ended December 31, 2020 compared with the prior year reflecting lower charge-offs and higher recoveries primarily benefiting from payment assistance and government stimulus.

Consistent with the Firm's policy, all credit card loans typically remain on accrual status until charged off. However, the Firm's allowance for loan losses includes the estimated uncollectible portion of accrued and billed interest and fee income. Refer to Note 12 for further information about this portfolio, including information about delinquencies.

Geographic and FICO composition of credit card loans

At December 31, 2020, $65.0 billion, or 45% of the total retained credit card loan portfolio, was concentrated in California, Texas, New York, Florida and Illinois, compared with $77.5 billion, or 46%, at December 31, 2019. Refer to Note 12 for additional information on the geographic and FICO composition of the Firm's credit card loans.

Modifications of credit card loans

At December 31, 2020, the Firm had $1.4 billion of credit card loans outstanding that have been modified in TDRs, which does not include loans with short-term or other insignificant modifications that are not considered TDRs, compared to $1.5 billion at December 31, 2019. Refer to Note 12 for additional information about loan modification programs for borrowers.

In its wholesale businesses, the Firm is exposed to credit risk primarily through its underwriting, lending, market-making, and hedging activities with and for clients and counterparties, as well as through various operating services (such as cash management and clearing activities), securities financing activities and cash placed with banks. A portion of the loans originated or acquired by the Firm's wholesale businesses is generally retained on the balance sheet. The Firm distributes a significant percentage of the loans that it originates into the market as part of its syndicated loan business and to manage portfolio concentrations and credit risk. The wholesale portfolio is actively managed, in part by conducting ongoing, in-depth reviews of client credit quality and transaction structure inclusive of collateral where applicable, and of industry, product and client concentrations. Refer to the industry discussion on pages 123-127 for further information.

The Firm's wholesale credit portfolio includes exposure held in CIB, CB, AWM and Corporate, as well as risk-rated business banking and auto dealer exposures held in CCB for which the wholesale methodology is applied when determining the allowance for credit losses.

In 2020, the impacts of the COVID-19 pandemic resulted in broad-based credit deterioration and an increase in the allowance for credit losses. As of December 31, 2020, the investment-grade percentage of the portfolio decreased from 74% to 71%, and criticized exposure increased $26.5 billion from $15.1 billion to $41.6 billion. The increase in criticized exposure was largely driven by downgrades in Consumer & Retail, Oil & Gas and Real Estate, and to a lesser extent, net portfolio activity in Technology, Media & Telecommunications. The continuation or worsening of the effects of the COVID-19 pandemic on the macroeconomic environment could result in further impacts to credit quality metrics, including investment-grade percentages, as well as to criticized and nonperforming exposures and charge-offs.

As of December 31, 2020 retained loans were up $33.3 billion predominantly driven by AWM and CIB, and lending-related commitments were up $32.4 billion, predominantly driven by CIB and CB.

Wholesale credit portfolio

December 31, (in millions)	Credit exposure		Nonperforming[f]	
	2020	2019	**2020**	2019
Loans retained	**$ 514,947**	$ 481,678	**$ 3,318**	$ 1,057
Loans held-for-sale	**5,784**	4,062	**284**	5
Loans at fair value [a]	**29,327**	25,139	**504**	209
Loans – reported	**550,058**	510,879	**4,106**	1,271
Derivative receivables	**79,630**	49,766	**56**	30
Receivables from customers[b]	**47,710**	33,706	**—**	—
Total wholesale credit-related assets	**677,398**	594,351	**4,162**	1,301
Assets acquired in loan satisfactions				
Real estate owned [c]	**NA**	NA	**125**	115
Other	**NA**	NA	**—**	19
Total assets acquired in loan satisfactions	**NA**	NA	**125**	134
Lending-related commitments [a]	**449,863**	417,510	**577**	474
Total wholesale credit portfolio	**$1,127,261**	$1,011,861	**$ 4,864**	$ 1,909
Credit derivatives used in credit portfolio management activities[c][d]	**$ (22,239)**	$ (18,530)	**$ —**	$ —
Liquid securities and other cash collateral held against derivatives[e]	**(14,806)**	(13,052)	**NA**	NA

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans, which resulted in a corresponding reclassification of certain off-balance sheet commitments. Prior-period amounts have been revised to conform with the current presentation.

(b) Receivables from customers reflect held-for-investment margin loans to brokerage clients in CIB, CCB and AWM; these are reported within accrued interest and accounts receivable on the Consolidated balance sheets.

(c) Prior-period amounts have been revised to conform with the current presentation.

(d) Represents the net notional amount of protection purchased and sold through credit derivatives used to manage both performing and nonperforming wholesale credit exposures; these derivatives do not qualify for hedge accounting under U.S. GAAP. Refer to Credit derivatives on page 131 and Note 5 for additional information.

(e) In the fourth quarter of 2020, the Firm refined its approach for disclosing additional collateral held by the Firm that may be used as security when the fair value of the client's exposure is in the Firm's favor. Prior-period amounts have been revised to conform with the current presentation.

(f) Loans that were modified in response to the COVID-19 pandemic continue to be risk-rated in accordance with the Firm's overall credit risk management framework. As of December 31, 2020, predominantly all of these loans were considered performing.

Wholesale assistance

In March 2020, the Firm began providing assistance to clients in response to the COVID-19 pandemic, predominantly in the form of payment deferrals and covenant modifications.

As of December 31, 2020, the Firm had approximately $1.6 billion of retained loans still under payment deferral, which has decreased approximately $4.6 billion from the third quarter, and $15.1 billion from the second quarter. Predominantly all clients that exited deferral are current or have paid down their loans, and the Firm has not experienced significant new payment deferral requests. The Firm continues to monitor the credit risk associated with loans subject to deferrals throughout the deferral period and on an ongoing basis after the borrowers are required to resume making regularly scheduled payments and considers expected losses of principal and accrued interest on these loans in its allowance for credit losses.

(in millions, except ratios)	December 31, 2020			September 30, 2020	June 30, 2020
Industry	Loan balance	Percent of total industry loan balance[(a)]	IG percentage of loan balance in payment deferral	Loan balance	Loan balance
Real Estate	**$ 550**	**0.46 %**	**36 %**	$ 4,385	$ 5,211
Individuals and Individual Entities	**402**	**0.37**	**4**	691	809
Transportation	**394**	**5.99**	**92**	346	294
Consumer & Retail	**82**	**0.21**	**2**	413	690
Automotive	**22**	**0.13**	**—**	15	8,827
Industrials	**19**	**0.09**	**—**	91	335
Healthcare	**7**	**0.04**	**—**	100	300
All Other industries	**147**	**0.08**	**99**	233	309
Total wholesale	**$ 1,623**	**0.32 %**	**45 %**	$ 6,274	$ 16,775

(a) Represents the balance of the retained loans which were still under payment deferral, divided by the respective industry total retained loans balance.

In addition, the Firm granted assistance in the form of covenant modifications. These types of assistance, both payment deferrals and covenant modifications, are generally not reported as TDRs, either because the modifications were insignificant or they qualified for the option to suspend the application of accounting guidance for TDRs as provided by the CARES Act and extended by the Consolidated Appropriations Act. A portion of the $1.6 billion of loans under payment deferral as December 31, 2020 could become TDRs in future periods, depending on the nature and timing of further modifications or payment arrangements offered to these borrowers. If the $1.6 billion of loans under payment deferral were considered TDRs, the Firm estimates that it would result in an increase in standardized RWA of as much as $500 million. Loans under assistance continue to be risk-rated in accordance with the Firm's overall credit risk management framework. As of December 31, 2020, predominantly all of these loans were considered performing.

Wholesale credit exposure – maturity and ratings profile

The following tables present the maturity and internal risk ratings profiles of the wholesale credit portfolio as of December 31, 2020 and 2019. The Firm generally considers internal ratings with qualitative characteristics equivalent to BBB-/Baa3 or higher as investment grade, and takes into consideration collateral and structural support when determining the internal risk rating for each credit facility. Refer to Note 12 for further information on internal risk ratings.

	Maturity profile[(g)]				Ratings profile			
December 31, 2020 (in millions, except ratios)	1 year or less	1 year through 5 years	After 5 years	**Total**	Investment-grade	Noninvestment-grade	**Total**	Total % of IG
Loans retained	**$ 183,969**	**$ 197,905**	**$ 133,073**	**$ 514,947**	**$ 379,273**	**$ 135,674**	**$ 514,947**	**74 %**
Derivative receivables				**79,630**			**79,630**	
Less: Liquid securities and other cash collateral held against derivatives[(b)]				**(14,806)**			**(14,806)**	
Total derivative receivables, net of collateral	**18,456**	**17,599**	**28,769**	**64,824**	**38,941**	**25,883**	**64,824**	**60**
Lending-related commitments[(c)]	**116,950**	**315,179**	**17,734**	**449,863**	**312,694**	**137,169**	**449,863**	**70**
Subtotal	**319,375**	**530,683**	**179,576**	**1,029,634**	**730,908**	**298,726**	**1,029,634**	**71**
Loans held-for-sale and loans at fair value[(c)(d)]				**35,111**			**35,111**	
Receivables from customers				**47,710**			**47,710**	
Total exposure – net of liquid securities and other cash collateral held against derivatives				**$ 1,112,455**			**$ 1,112,455**	
Credit derivatives used in credit portfolio management activities[(e)(f)]	**$ (6,190)**	**$ (13,223)**	**$ (2,826)**	**$ (22,239)**	**$ (17,860)**	**$ (4,379)**	**$ (22,239)**	**80 %**

December 31, 2019 (in millions, except ratios)	Maturity profile[g] 1 year or less	1 year through 5 years	After 5 years	Total	Ratings profile Investment-grade	Noninvestment-grade	Total	Total % of IG
Loans retained[a]	$ 159,006	$ 186,256	$ 136,416	$ 481,678	$ 363,444	$ 118,234	$ 481,678	75 %
Derivative receivables				49,766			49,766	
Less: Liquid securities and other cash collateral held against derivatives[b]				(13,052)			(13,052)	
Total derivative receivables, net of collateral	7,136	7,569	22,009	36,714	29,416	7,298	36,714	80
Lending-related commitments[a][c]	87,577	312,939	16,994	417,510	296,702	120,808	417,510	71
Subtotal	253,719	506,764	175,419	935,902	689,562	246,340	935,902	74
Loans held-for-sale and loans at fair value[c][d]				29,201			29,201	
Receivables from customers				33,706			33,706	
Total exposure – net of liquid securities and other cash collateral held against derivatives				$ 998,809			$ 998,809	
Credit derivatives used in credit portfolio management activities[a][e][f]	$ (5,412)	$ (10,031)	$ (3,087)	$ (18,530)	$ (16,724)	$ (1,806)	$ (18,530)	90 %

(a) Prior-period amounts have been revised to conform with the current presentation.
(b) In the fourth quarter of 2020, the Firm refined its approach for disclosing additional collateral held by the Firm that may be used as security when the fair value of the client's exposure is in the Firm's favor. Prior-period amounts have been revised to conform with the current presentation.
(c) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans, which resulted in a corresponding reclassification of certain off-balance sheet commitments. Prior-period amounts have been revised to conform with the current presentation.
(d) Represents loans held-for-sale, primarily related to syndicated loans and loans transferred from the retained portfolio, and loans at fair value.
(e) These derivatives do not qualify for hedge accounting under U.S. GAAP.
(f) The notional amounts are presented on a net basis by underlying reference entity and the ratings profile shown is based on the ratings of the reference entity on which protection has been purchased. Predominantly all of the credit derivatives entered into by the Firm where it has purchased protection used in credit portfolio management activities are executed with investment-grade counterparties.
(g) The maturity profile of retained loans, lending-related commitments and derivative receivables is generally based on remaining contractual maturity. Derivative contracts that are in a receivable position at December 31, 2020, may become payable prior to maturity based on their cash flow profile or changes in market conditions.

Wholesale credit exposure – industry exposures

The Firm focuses on the management and diversification of its industry exposures, and pays particular attention to industries with actual or potential credit concerns.

Exposures deemed criticized align with the U.S. banking regulators' definition of criticized exposures, which consist of the special mention, substandard and doubtful categories. Total criticized exposure excluding loans held-for-sale and loans at fair value, was $41.6 billion at December 31, 2020, compared with $15.1 billion at December 31, 2019, representing approximately 4.0% and 1.5% of total wholesale credit exposure, respectively. The increase in total criticized exposure was largely driven by downgrades in Consumer & Retail, Oil & Gas and Real Estate due to impacts from the COVID-19 pandemic, and to a lesser extent, net portfolio activity in Technology, Media & Telecommunications. Predominantly all of the $41.6 billion was performing and largely undrawn.

The table below summarizes by industry the Firm's exposures as of December 31, 2020 and 2019. The industry of risk category is generally based on the client or counterparty's primary business activity. Refer to Note 4 for additional information on industry concentrations.

Wholesale credit exposure – industries[(a)]

			Noninvestment-grade			Selected metrics			
As of or for the year ended December 31, 2020 (in millions)	Credit exposure[(f)(g)]	Investment-grade[(g)]	Noncriticized[(g)]	Criticized performing	Criticized nonperforming	30 days or more past due and accruing loans[(h)]	Net charge-offs/ (recoveries)	Credit derivative hedges[(i)]	Liquid securities and other cash collateral held against derivative receivables[(k)]
Real Estate	$ 148,498	$ 116,124	$ 27,576	$ 4,294	$ 504	$ 374	$ 94	$ (110)	$ –
Individuals and Individual Entities[(b)]	122,870	107,266	14,688	227	689	1,570	(17)	–	–
Consumer & Retail	108,437	57,580	41,624	8,852	381	203	55	(381)	(5)
Technology, Media & Telecommunications	72,150	36,435	27,770	7,738	207	10	73	(934)	(56)
Asset Managers	66,573	57,582	8,885	85	21	19	1	–	(4,685)
Industrials	66,470	37,512	26,881	1,852	225	278	70	(658)	(61)
Healthcare	60,118	44,901	13,356	1,684	177	96	104	(378)	(191)
Banks & Finance Cos	54,032	35,115	17,820	1,045	52	20	13	(555)	(1,648)
Automotive	43,331	25,548	15,575	2,149	59	152	22	(434)	–
Oil & Gas	39,159	18,456	14,969	4,952	782	11	249	(238)	(4)
State & Municipal Govt[(c)]	38,286	37,705	574	2	5	41	–	–	(41)
Utilities	30,124	22,451	7,048	571	54	14	(7)	(402)	(1)
Chemicals & Plastics	17,176	10,622	5,703	822	29	6	–	(83)	–
Central Govt	17,025	16,652	373	–	–	–	–	(8,364)	(982)
Transportation	16,232	7,549	6,340	2,137	206	30	117	(83)	(26)
Metals & Mining	15,542	5,958	8,699	704	181	8	16	(141)	(13)
Insurance	13,141	10,177	2,960	3	1	7	–	–	(1,771)
Securities Firms	8,048	6,116	1,927	1	4	–	18	(49)	(3,423)
Financial Markets Infrastructure	6,515	6,449	66	–	–	–	–	–	(10)
All other[(d)]	100,713	84,650	15,185	504	374	83	(9)	(9,429)	(1,889)
Subtotal	**$ 1,044,440**	**$ 744,848**	**$ 258,019**	**$ 37,622**	**$ 3,951**	**$ 2,922**	**$ 799**	**$ (22,239)**	**$ (14,806)**
Loans held-for-sale and loans at fair value	35,111								
Receivables from customers	47,710								
Total[(e)]	**$ 1,127,261**								

As of or for the year ended December 31, 2019 (in millions)	Credit exposure[f][g]	Investment-grade[g]	Noninvestment-grade			Selected metrics			
			Noncriticized[g]	Criticized performing	Criticized nonperforming	30 days or more past due and accruing loans	Net charge-offs/ (recoveries)	Credit derivative hedges[i]	Liquid securities and other cash collateral held against derivative receivables[k]
Real Estate	$ 150,919	$ 121,625	$ 27,779	$ 1,457	$ 58	$ 104	$ 13	$ (100)	$ –
Individuals and Individual Entities[b]	105,027	93,181	11,617	192	37	388	33	–	(287)
Consumer & Retail	106,986	58,704	45,806	2,261	215	118	124	(235)	(5)
Technology, Media & Telecommunications	60,033	35,878	21,066	2,953	136	27	27	(658)	(13)
Asset Managers	54,304	47,569	6,716	6	13	18	–	–	(4,410)
Industrials	62,483	39,434	21,673	1,157	219	172	48	(746)	(1)
Healthcare	50,824	36,988	12,544	1,141	151	108	14	(405)	(144)
Banks & Finance Cos	50,786	34,941	15,031	808	6	–	–	(834)	(1,419)
Automotive	35,118	24,255	10,246	615	2	8	1	(194)	–
Oil & Gas	41,641	22,244	17,823	995	579	–	98	(429)	(6)
State & Municipal Govt[c]	30,095	29,586	509	–	–	33	7	–	(16)
Utilities	34,843	22,213	12,316	301	13	2	39	(414)	(34)
Chemicals & Plastics	17,499	12,033	5,243	221	2	5	–	(10)	(13)
Central Govt	14,865	14,524	341	–	–	–	–	(9,018)	(850)
Transportation	14,497	8,734	5,336	353	74	30	8	(37)	(37)
Metals & Mining	15,586	7,095	7,789	661	41	2	(1)	(33)	(2)
Insurance	12,348	9,458	2,867	19	4	3	–	(36)	(1,790)
Securities Firms	7,381	6,010	1,344	27	–	–	–	(48)	(3,088)
Financial Markets Infrastructure	4,121	3,969	152	–	–	–	–	–	(4)
All other[d]	79,598	73,453	5,722	412	11	4	4	(5,333) [j]	(933)
Subtotal	$ 948,954	$ 701,894	$ 231,920	$ 13,579	$ 1,561	$ 1,022	$ 415	$ (18,530)	$ (13,052)
Loans held-for-sale and loans at fair value	29,201								
Receivables from customers	33,706								
Total[e]	$ 1,011,861								

(a) The industry rankings presented in the table as of December 31, 2019, are based on the industry rankings of the corresponding exposures at December 31, 2020, not actual rankings of such exposures at December 31, 2019.

(b) Individuals and Individual Entities predominantly consists of Wealth Management clients within AWM and includes exposure to personal investment companies and personal and testamentary trusts.

(c) In addition to the credit risk exposure to states and municipal governments (both U.S. and non-U.S.) at December 31, 2020 and 2019, noted above, the Firm held: $7.2 billion and $6.5 billion, respectively, of trading assets; $20.4 billion and $29.8 billion, respectively, of AFS securities; and $12.8 billion and $4.8 billion, respectively, of HTM securities, issued by U.S. state and municipal governments. Refer to Note 2 and Note 10 for further information.

(d) All other includes: SPEs and Private education and civic organizations, representing approximately 92% and 8%, respectively, at December 31, 2020 and 90% and 10%, respectively, at December 31, 2019 .

(e) Excludes cash placed with banks of $516.9 billion and $254.0 billion, at December 31, 2020 and 2019, respectively, which is predominantly placed with various central banks, primarily Federal Reserve Banks.

(f) Credit exposure is net of risk participations and excludes the benefit of credit derivatives used in credit portfolio management activities held against derivative receivables or loans and liquid securities and other cash collateral held against derivative receivables.

(g) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans, which resulted in a corresponding reclassification of certain off-balance sheet commitments. Prior-period amounts have been revised to conform with the current presentation.

(h) Generally excludes loans under payment deferral programs offered in response to the COVID-19 pandemic.

(i) Represents the net notional amounts of protection purchased and sold through credit derivatives used to manage the credit exposures; these derivatives do not qualify for hedge accounting under U.S. GAAP. The All other category includes purchased credit protection on certain credit indices.

(j) Prior-period amount has been revised to conform with the current presentation.

(k) In the fourth quarter of 2020, the Firm refined its approach for disclosing additional collateral held by the Firm that may be used as security when the fair value of the client's exposure is in the Firm's favor. Prior-period amounts have been revised to conform with the current presentation.

Presented below is additional detail on certain of the Firm's largest industry exposures and/or certain industries which present potential heightened credit concerns.

Real Estate

Real Estate exposure was $148.5 billion as of December 31, 2020, of which $85.6 billion was multifamily lending as shown in the table below. During the year ended December 31, 2020, the following changes were primarily driven by impacts from the COVID-19 pandemic:

- the investment-grade portion of the Real Estate portfolio decreased from 81% to 78%.
- the drawn percentage of this portfolio increased from 78% to 80%
- criticized exposure increased by $3.3 billion from $1.5 billion to $4.8 billion

	December 31, 2020				
(in millions, except ratios)	Loans and Lending-related Commitments[d]	Derivative Receivables	Credit exposure	% Investment-grade	% Drawn[e]
Multifamily[a]	$ 85,368	$ 183	$ 85,551	85 %	92 %
Office	16,372	475	16,847	76	70
Other Income Producing Properties[b]	13,435	421	13,856	76	55
Retail	10,573	199	10,772	60	69
Services and Non Income Producing	9,242	22	9,264	62	47
Industrial	9,039	69	9,108	76	73
Lodging	3,084	16	3,100	24	57
Total Real Estate Exposure[c]	147,113	1,385	148,498	78	80

	December 31, 2019				
(in millions, except ratios)	Loans and Lending-related Commitments[d]	Derivative Receivables	Credit exposure	% Investment-grade	% Drawn[e]
Multifamily[a]	$ 86,381	$ 58	$ 86,439	91 %	92 %
Office	15,734	231	15,965	80	70
Other Income Producing Properties[b]	14,372	181	14,553	48	45
Retail	11,347	87	11,434	83	68
Services and Non Income Producing	9,922	19	9,941	57	47
Industrial	8,842	24	8,866	74	75
Lodging	3,702	19	3,721	51	38
Total Real Estate Exposure	150,300	619	150,919	81	78

(a) Multifamily exposure is largely in California.
(b) Other Income Producing Properties consists of clients with diversified property types or other property types outside of multifamily, office, retail, industrial and lodging with less material exposures.
(c) Real Estate exposure is approximately 80% secured; unsecured exposure is approximately 78% investment-grade.
(d) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans, which resulted in a corresponding reclassification of certain off-balance sheet commitments. Prior-period amounts have been revised to conform with the current presentation.
(e) Represents drawn exposure as a percentage of credit exposure.

Consumer & Retail

Consumer & Retail exposure was $108.4 billion as of December 31, 2020, and predominantly included Retail, Food and Beverage, and Business and Consumer Services as shown in the table below. During the year ended December 31, 2020, the following changes were primarily driven by impacts from the COVID-19 pandemic:

- the investment-grade portion of the Consumer & Retail portfolio decreased from 55% to 53%
- the drawn percentage of this portfolio increased from 35% to 36%
- criticized exposure increased by $6.7 billion from $2.5 billion to $9.2 billion

	December 31, 2020				
(in millions, except ratios)	**Loans and Lending-related Commitments**	**Derivative Receivables**	**Credit exposure**	**% Investment-grade**	**% Drawn[d]**
Retail[a]	**$ 32,486**	**$ 887**	**$ 33,373**	**52 %**	**33 %**
Food and Beverage	**28,012**	**897**	**28,909**	**62**	**33**
Business and Consumer Services	**24,760**	**599**	**25,359**	**52**	**41**
Consumer Hard Goods	**12,937**	**178**	**13,115**	**59**	**36**
Leisure[b]	**7,440**	**241**	**7,681**	**18**	**43**
Total Consumer & Retail[c]	**105,635**	**2,802**	**108,437**	**53**	**36**

	December 31, 2019				
(in millions, except ratios)	Loans and Lending-related Commitments	Derivative Receivables	Credit exposure	% Investment-grade	% Drawn[d]
Retail[a]	$ 29,290	$ 294	$ 29,584	54 %	37 %
Food and Beverage	27,956	625	28,581	67	36
Business and Consumer Services	24,242	249	24,491	51	37
Consumer Hard Goods	13,144	109	13,253	65	35
Leisure[b]	10,930	147	11,077	21	19
Total Consumer & Retail	105,562	1,424	106,986	55	35

(a) Retail consists of Home Improvement & Specialty Retailers, Restaurants, Supermarkets, Discount & Drug Stores, Specialty Apparel and Department Stores.
(b) Leisure consists of Gaming, Arts & Culture, Travel Services and Sports & Recreation. As of December 31, 2020 approximately 75% of the noninvestment-grade Leisure portfolio is secured.
(c) Approximately 80% of the noninvestment-grade portfolio is secured.
(d) Represents drawn exposure as a percent of credit exposure.

Oil & Gas

Oil & Gas exposure was $39.2 billion as of December 31, 2020, including $19.3 billion of Exploration & Production and Oil field Services as shown in the table below. During the year ended December 31, 2020, the following changes were driven by lower oil prices and impacts from the COVID-19 pandemic:

- the investment-grade portion of the Oil & Gas portfolio decreased from 53% to 47%
- criticized exposure increased by $4.1 billion from $1.6 billion to $5.7 billion

	December 31, 2020				
(in millions, except ratios)	**Loans and Lending-related Commitments**	**Derivative Receivables**	**Credit exposure**	**% Investment-grade**	**% Drawn[c]**
Exploration & Production ("E&P") and Oil field Services	**$ 18,228**	**$ 1,048**	**$ 19,276**	**32 %**	**37 %**
Other Oil & Gas[a]	**19,288**	**595**	**19,883**	**62**	**21**
Total Oil & Gas[b]	**37,516**	**1,643**	**39,159**	**47**	**29**

	December 31, 2019				
(in millions, except ratios)	Loans and Lending-related Commitments	Derivative Receivables	Credit exposure	% Investment-grade	% Drawn[c]
Exploration & Production ("E&P") and Oil field Services	$ 22,543	$ 646	$ 23,189	38 %	38 %
Other Oil & Gas[a]	18,246	206	18,452	73	23
Total Oil & Gas[b]	40,789	852	41,641	53	31

(a) Other Oil & Gas includes Integrated Oil & Gas companies, Midstream/Oil Pipeline companies and refineries.
(b) Secured lending was $13.2 billion and $15.7 billion at December 31, 2020 and 2019, respectively, approximately half of which is reserve-based lending to the Exploration & Production sub-sector; unsecured exposure is largely investment-grade.
(c) Represents drawn exposure as a percent of credit exposure.

Loans

In its wholesale businesses, the Firm provides loans to a variety of clients, ranging from large corporate and institutional clients to high-net-worth individuals. Refer to Note 12 for a further discussion on loans, including information about delinquencies, loan modifications and other credit quality indicators.

The following table presents the change in the nonaccrual loan portfolio for the years ended December 31, 2020 and 2019. The increase was driven by downgrades across multiple industries on client credit deterioration, with the largest concentration in Real Estate, predominantly within retail and lodging.

Wholesale nonaccrual loan activity

Year ended December 31, (in millions)	2020	2019
Beginning balance	**$ 1,271**	$ 1,587
Additions[a]	**6,753**	2,552
Reductions:		
Paydowns and other	**2,290**	1,585
Gross charge-offs	**922**	425
Returned to performing status	**569**	652
Sales	**137**	206
Total reductions	**3,918**	2,868
Net changes	**2,835**	(316)
Ending balance	**$ 4,106**	$ 1,271

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.

The following table presents net charge-offs/recoveries, which are defined as gross charge-offs less recoveries, for the years ended December 31, 2020 and 2019. The amounts in the table below do not include gains or losses from sales of nonaccrual loans.

Wholesale net charge-offs/(recoveries)

Year ended December 31, (in millions, except ratios)	2020	2019
Loans – reported		
Average loans retained	**$ 509,907**	$ 472,628
Gross charge-offs	**954**	472
Gross recoveries collected	**(155)**	(57)
Net charge-offs/(recoveries)	**799**	415
Net charge-off/(recovery) rate	**0.16 %**	0.09 %

Lending-related commitments

The Firm uses lending-related financial instruments, such as commitments (including revolving credit facilities) and guarantees, to address the financing needs of its clients. The contractual amounts of these financial instruments represent the maximum possible credit risk should the clients draw down on these commitments or when the Firm fulfills its obligations under these guarantees, and the clients subsequently fail to perform according to the terms of these contracts. Most of these commitments and guarantees have historically been refinanced, extended, cancelled, or expired without being drawn upon or a default occurring. As a result, the Firm does not believe that the total contractual amount of these wholesale lending-related commitments is representative of the Firm's expected future credit exposure or funding requirements. Refer to Note 28 for further information on wholesale lending-related commitments.

Receivables from Customers

Receivables from customers reflect held-for-investment margin loans to brokerage clients in CIB, CCB and AWM that are collateralized by assets maintained in the clients' brokerage accounts (e.g., cash on deposit, liquid and readily marketable debt or equity securities). Because of this collateralization, no allowance for credit losses is generally held against these receivables. To manage its credit risk the Firm establishes margin requirements and monitors the required margin levels on an ongoing basis, and requires clients to deposit additional cash or other collateral, or to reduce positions, when appropriate. These receivables are reported within accrued interest and accounts receivable on the Firm's Consolidated balance sheets.

Clearing services

The Firm provides clearing services for clients entering into certain securities and derivative contracts. Through the provision of these services the Firm is exposed to the risk of non-performance by its clients and may be required to share in losses incurred by CCPs. Where possible, the Firm seeks to mitigate its credit risk to its clients through the collection of adequate margin at inception and throughout the life of the transactions and can also cease the provision of clearing services if clients do not adhere to their obligations under the clearing agreement. Refer to Note 28 for a further discussion of clearing services.

Derivative contracts

Derivatives enable clients and counterparties to manage risks including credit risk and risks arising from fluctuations in interest rates, foreign exchange, equities, and commodities. The Firm makes markets in derivatives in order to meet these needs and uses derivatives to manage certain risks associated with net open risk positions from its market-making activities, including the counterparty credit risk arising from derivative receivables. The Firm also uses derivative instruments to manage its own credit risk and other market risk exposure. The nature of the counterparty and the settlement mechanism of the derivative affect the credit risk to which the Firm is exposed. For OTC derivatives the Firm is exposed to the credit risk of the derivative counterparty. For exchange-traded derivatives ("ETD"), such as futures and options, and cleared over-the-counter ("OTC-cleared") derivatives, the Firm can also be exposed to the credit risk of the relevant CCP. Where possible, the Firm seeks to mitigate its credit risk exposures arising from derivative contracts through the use of legally enforceable master netting arrangements and collateral agreements. The percentage of the Firm's over-the-counter derivative transactions subject to collateral agreements — excluding foreign exchange spot trades, which are not typically covered by collateral agreements due to their short maturity and centrally cleared trades that are settled daily — was approximately 88% and 90% at December 31, 2020 and 2019, respectively. Refer to Note 5 for additional information on the Firm's use of collateral agreements. Refer to Note 5 for a further discussion of derivative contracts, counterparties and settlement types.

The fair value of derivative receivables reported on the Consolidated balance sheets were $79.6 billion and $49.8 billion at December 31, 2020 and 2019, respectively, with increases in CIB resulting from market movements. Derivative receivables represent the fair value of the derivative contracts after giving effect to legally enforceable master netting agreements and the related cash collateral held by the Firm. In addition, the Firm held liquid securities and other cash collateral that the Firm believes is legally enforceable and may be used as security when the fair value of the client's exposure is in the Firm's favor. Liquid securities represents high quality liquid assets as defined in the LCR rule. In management's view, the appropriate measure of current credit risk should also take into consideration other collateral, which generally represents securities that do not qualify as high quality liquid assets under the LCR rule, but that the Firm believes is legally enforceable. The collateral amounts for each counterparty are limited to the net derivative receivables for the counterparty. The following tables summarize the net derivative receivables and the internal ratings profile for the periods presented.

Derivative receivables

December 31, (in millions)	2020	2019
Total, net of cash collateral	**$ 79,630**	$ 49,766
Liquid securities and other cash collateral held against derivative receivables[(a)]	**(14,806)**	(13,052)
Total, net of liquid securities and other cash collateral	**$ 64,824**	$ 36,714
Other collateral held against derivative receivables[(a)]	**(6,022)**	(1,837)
Total, net of collateral	**$ 58,802**	$ 34,877

(a) In the fourth quarter of 2020, the Firm refined its approach for disclosing additional collateral held by the Firm that may be used as security when the fair value of the client's exposure is in the Firm's favor. Prior-period amounts have been revised to conform with the current presentation.

Ratings profile of derivative receivables

December 31, (in millions, except ratios)	2020[(a)]			2019[(a)]		
	Exposure net of collateral		% of exposure net of collateral	Exposure net of collateral		% of exposure net of collateral
Investment-grade	$	**37,013**	**63 %**	$	27,851	80 %
Noninvestment-grade		**21,789**	**37**		7,026	20
Total	$	**58,802**	**100 %**	$	34,877	100 %

(a) In the fourth quarter of 2020, the Firm refined its approach for disclosing additional collateral held by the Firm that may be used as security when the fair value of the client's exposure is in the Firm's favor. Prior-period amounts have been revised to conform with the current presentation.

The Firm also holds additional collateral (primarily cash, G7 government securities, other liquid government agency and guaranteed securities, and corporate debt and equity securities) delivered by clients at the initiation of transactions, as well as collateral related to contracts that have a non-daily call frequency and collateral that the Firm has agreed to return but has not yet settled as of the reporting date. Although this collateral does not reduce the balances and is not included in the table above, it is available as security against potential exposure that could arise should the fair value of the client's derivative contracts move in the Firm's favor. Refer to Note 5 for additional information on the Firm's use of collateral agreements.

While useful as a current view of credit exposure, the net fair value of the derivative receivables does not capture the potential future variability of that credit exposure. To capture the potential future variability of credit exposure, the Firm calculates, on a client-by-client basis, three measures of potential derivatives-related credit loss: Peak, Derivative Risk Equivalent ("DRE"), and Average exposure ("AVG"). These measures all incorporate netting and collateral benefits, where applicable.

Peak represents a conservative measure of potential derivative exposure, including the benefit of collateral, to a counterparty calculated in a manner that is broadly equivalent to a 97.5% confidence level over the life of the transaction. Peak is the primary measure used by the Firm for setting credit limits for derivative contracts, senior management reporting and derivatives exposure management.

DRE exposure is a measure that expresses the risk of derivative exposure, including the benefit of collateral, on a basis intended to be equivalent to the risk of loan exposures. DRE is a less extreme measure of potential credit loss than Peak and is used as an input for aggregating derivative credit risk exposures with loans and other credit risk.

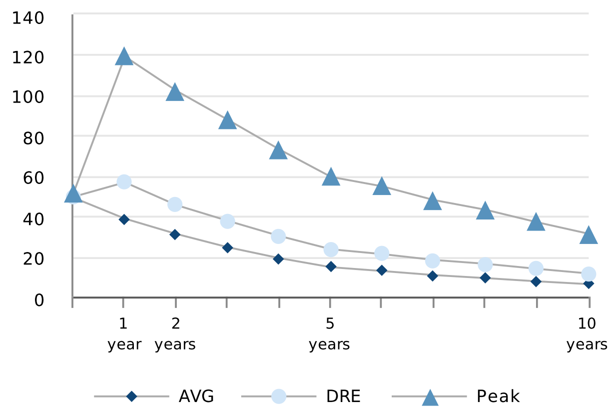
Finally, AVG is a measure of the expected fair value of the Firm's derivative exposure, including the benefit of collateral, at future time periods. AVG over the total life of the derivative contract is used as the primary metric for pricing purposes and is used to calculate credit risk capital and CVA, as further described below.

The fair value of the Firm's derivative receivables incorporates CVA to reflect the credit quality of counterparties. CVA is based on the Firm's AVG to a counterparty and the counterparty's credit spread in the credit derivatives market. The Firm believes that active risk management is essential to controlling the dynamic credit risk in the derivatives portfolio. In addition, the Firm's risk management process takes into consideration the potential impact of wrong-way risk, which is broadly defined as the risk that exposure to a counterparty is positively correlated with the impact of a default by the same counterparty, which could cause exposure to increase at the same time as the counterparty's capacity to meet its obligations is decreasing. Many factors may influence the nature and magnitude of these correlations over time. To the extent that these correlations are identified, the Firm may adjust the CVA associated with a particular counterparty's AVG. The Firm risk manages exposure to changes in CVA by entering into credit derivative contracts, as well as interest rate, foreign exchange, equity and commodity derivative contracts.

The below graph shows exposure profiles to the Firm's current derivatives portfolio over the next 10 years as calculated by the Peak, DRE and AVG metrics. The three measures generally show that exposure will decline after the first year, if no new trades are added to the portfolio.

Exposure profile of derivatives measures

December 31, 2020
(in billions)



Credit derivatives

The Firm uses credit derivatives for two primary purposes: first, in its capacity as a market-maker, and second, as an end-user, to manage the Firm's own credit risk associated with various exposures.

Credit portfolio management activities

Included in the Firm's end-user activities are credit derivatives used to mitigate the credit risk associated with traditional lending activities (loans and lending-related commitments) and derivatives counterparty exposure in the Firm's wholesale businesses (collectively, "credit portfolio management activities"). Information on credit portfolio management activities is provided in the table below.

The Firm also uses credit derivatives as an end-user to manage other exposures, including credit risk arising from certain securities held in the Firm's market-making businesses. These credit derivatives are not included in credit portfolio management activities.

Credit derivatives used in credit portfolio management activities

	Notional amount of protection purchased and sold[b]	
December 31, (in millions)	**2020**	2019
Credit derivatives used to manage:		
Loans and lending-related commitments	**$ 3,877**	$ 2,047
Derivative receivables [a]	**18,362**	16,483
Credit derivatives used in credit portfolio management activities	**$ 22,239**	$ 18,530

(a) Prior-period amount has been revised to conform with the current presentation.

(b) Amounts are presented net, considering the Firm's net protection purchased or sold with respect to each underlying reference entity or index.

The credit derivatives used in credit portfolio management activities do not qualify for hedge accounting under U.S. GAAP; these derivatives are reported at fair value, with gains and losses recognized in principal transactions revenue. In contrast, the loans and lending-related commitments being risk-managed are accounted for on an accrual basis. This asymmetry in accounting treatment, between loans and lending-related commitments and the credit derivatives used in credit portfolio management activities, causes earnings volatility that is not representative, in the Firm's view, of the true changes in value of the Firm's overall credit exposure.

The effectiveness of credit default swaps ("CDS") as a hedge against the Firm's exposures may vary depending on a number of factors, including the named reference entity (i.e., the Firm may experience losses on specific exposures that are different than the named reference entities in the purchased CDS); the contractual terms of the CDS (which may have a defined credit event that does not align with an actual loss realized by the Firm); and the maturity of the Firm's CDS protection (which in some cases may be shorter than the Firm's exposures). However, the Firm generally seeks to purchase credit protection with a maturity date that is the same or similar to the maturity date of the exposure for which the protection was purchased, and remaining differences in maturity are actively monitored and managed by the Firm. Refer to Credit derivatives in Note 5 for a detailed description of credit derivatives.

ALLOWANCE FOR CREDIT LOSSES

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. The adoption of this guidance established a single allowance framework for all financial assets measured at amortized cost and certain off-balance sheet credit exposures. This framework requires that management's estimate reflects credit losses over the instrument's remaining expected life and considers expected future changes in macroeconomic conditions. Refer to Note 1 for further information.

The Firm's allowance for credit losses comprises:

- the allowance for loan losses, which covers the Firm's retained loan portfolios (scored and risk-rated) and is presented separately on the Consolidated balance sheets,
- the allowance for lending-related commitments, which is presented on the Consolidated balance sheets in accounts payable and other liabilities, and
- the allowance for credit losses on investment securities, which covers the Firm's HTM and AFS securities and is recognized within Investment Securities on the Consolidated balance sheets.

The allowance for credit losses increased compared with December 31, 2019, primarily reflecting the deterioration and uncertainty in the macroeconomic environment, in particular in the first half of 2020, as a result of the impact of the COVID-19 pandemic, consisting of:

- a net $7.4 billion addition in consumer, predominantly in the credit card portfolio, and
- a net $4.7 billion addition in wholesale, across the LOBs, impacting multiple industries.

The adoption of CECL on January 1, 2020, resulted in a $4.3 billion addition to the allowance for credit losses.

Discussion of changes in the allowance during 2020

The increase in the allowance for loan losses and lending-related commitments was primarily driven by an increase in the provision for credit losses, reflecting the deterioration in and uncertainty around the future macroeconomic environment as a result of the impact of the COVID-19 pandemic.

As of December 31, 2020, the Firm's central case reflected U.S. unemployment rates of approximately 7% through the second quarter of 2021 and remaining above 5% until the second half of 2022. This compared with relatively low levels of unemployment of approximately 4% throughout 2020 and 2021 in the Firm's January 1, 2020 central case.

Further, while the Firm's January 1, 2020 central case U.S. GDP forecast reflected a 1.7% expansion in 2020, actual U.S. GDP contracted approximately 2.5% in 2020. As of December 31, 2020, the Firm's central case assumptions reflect a return to pre-pandemic GDP levels in the fourth quarter of 2021.

Due to elevated uncertainty in the near term outlook, driven by the potential for increased infection rates and related lock downs resulting from the pandemic, as well as the prospect that government and other consumer relief measures set to expire may not be extended, the Firm has placed significant weighting on its adverse scenarios. These scenarios incorporate more punitive macroeconomic factors than the central case assumptions, resulting in weighted average U.S. unemployment rates remaining elevated throughout 2021 and 2022, ending the fourth quarter of 2022 at approximately 6%, and in U.S. GDP ending 2022 approximately 0.9% higher than fourth quarter 2019 actual pre-pandemic levels.

The Firm's central case assumptions reflected U.S. unemployment rates and U.S. real GDP as follows:

	Assumptions at January 1, 2020		
	2Q20	4Q20[b]	2Q21
U.S. unemployment rate[a]	3.7 %	3.8 %	4.0 %
Cumulative change in U.S. real GDP from 12/31/2019	0.9 %	1.7 %	2.4 %
	Assumptions at December 31, 2020		
	2Q21	4Q21	2Q22
U.S. unemployment rate[a]	6.8 %	5.7 %	5.1 %
Cumulative change in U.S. real GDP from 12/31/2019	(1.9)%	0.6 %	2.0 %

(a) Reflects quarterly average of forecasted U.S. unemployment rate.
(b) 4Q20 actual U.S. unemployment rate (quarterly average) was 6.8%. 4Q20 actual cumulative change in U.S. real GDP from 4Q19 was (2.5%).

Subsequent changes to this forecast and related estimates will be reflected in the provision for credit losses in future periods. Refer to Note 13 and Note 10 for a description of the policies, methodologies and judgments used to determine the Firm's allowances for credit losses on loans, lending-related commitments, and investment securities.

Refer to Critical Accounting Estimates Used by the Firm on pages 152-155 for further information on the allowance for credit losses and related management judgments.

Refer to Consumer Credit Portfolio on pages 114-120, Wholesale Credit Portfolio on pages 121-131 and Note 12 for additional information on the consumer and wholesale credit portfolios.

The adoption of the CECL accounting guidance resulted in a change in the accounting for PCI loans, which are considered PCD loans under CECL. In conjunction with the adoption of CECL, the Firm reclassified risk-rated loans and lending-related commitments from the consumer, excluding credit card portfolio segment to the wholesale portfolio segment, to align with the methodology applied when determining the allowance. Prior-period amounts have been revised to conform with the current presentation. Refer to Note 1 for further information.

Allowance for credit losses and related information

	2020[d]				2019			
Year ended December 31, (in millions, except ratios)	Consumer, excluding credit card	Credit card	Wholesale	Total	Consumer, excluding credit card	Credit card	Wholesale	Total
Allowance for loan losses								
Beginning balance at January 1,	**$ 2,538**	**$ 5,683**	**$ 4,902**	**$ 13,123**	$ 3,434	$ 5,184	$ 4,827	$ 13,445
Cumulative effect of a change in accounting principle	**297**	**5,517**	**(1,642)**	**4,172**	NA	NA	NA	NA
Gross charge-offs	**805**	**5,077**	**954**	**6,836**	902	5,436	472	6,810
Gross recoveries collected	**(631)**	**(791)**	**(155)**	**(1,577)**	(536)	(588)	(57)	(1,181)
Net charge-offs	**174**	**4,286**	**799**	**5,259**	366	4,848	415	5,629
Write-offs of PCI loans[a]	**NA**	**NA**	**NA**	**NA**	151	–	–	151
Provision for loan losses	**974**	**10,886**	**4,431**	**16,291**	(378)	5,348	479	5,449
Other	**1**	**–**	**–**	**1**	(1)	(1)	11	9
Ending balance at December 31,	**$ 3,636**	**$ 17,800**	**$ 6,892**	**$ 28,328**	$ 2,538	$ 5,683	$ 4,902	$ 13,123
Allowance for lending-related commitments								
Beginning balance at January 1,	**$ 12**	**$ –**	**$ 1,179**	**$ 1,191**	$ 12	$ –	$ 1,043	$ 1,055
Cumulative effect of a change in accounting principle	**133**	**–**	**(35)**	**98**	NA	NA	NA	NA
Provision for lending-related commitments	**42**	**–**	**1,079**	**1,121**	–	–	136	136
Other	**–**	**–**	**(1)**	**(1)**	–	–	–	–
Ending balance at December 31,	**$ 187**	**$ –**	**$ 2,222**	**$ 2,409**	$ 12	$ –	$ 1,179	$ 1,191
Impairment methodology								
Asset-specific[b]	**$ (7)**	**$ 633**	**$ 682**	**$ 1,308**	$ 75	$ 477	$ 295	$ 847
Portfolio-based	**3,643**	**17,167**	**6,210**	**27,020**	1,476	5,206	4,607	11,289
PCI	**NA**	**NA**	**NA**	**NA**	987	–	–	987
Total allowance for loan losses	**$ 3,636**	**$ 17,800**	**$ 6,892**	**$ 28,328**	$ 2,538	$ 5,683	$ 4,902	$ 13,123
Impairment methodology								
Asset-specific	**$ –**	**$ –**	**$ 114**	**$ 114**	$ –	$ –	$ 102	$ 102
Portfolio-based	**187**	**–**	**2,108**	**2,295**	12	–	1,077	1,089
Total allowance for lending-related commitments	**$ 187**	**$ –**	**$ 2,222**	**$ 2,409**	$ 12	$ –	$ 1,179	$ 1,191
Total allowance for credit losses	**$ 3,823**	**$ 17,800**	**$ 9,114**	**$ 30,737**	$ 2,550	$ 5,683	$ 6,081	$ 14,314
Memo:								
Retained loans, end of period	**$ 302,127**	**$ 143,432**	**$ 514,947**	**$ 960,506**	$ 294,999	$ 168,924	$ 481,678	$ 945,601
Retained loans, average	**302,005**	**146,391**	**509,907**	**958,303**	312,972	156,319	472,628	941,919
Credit ratios								
Allowance for loan losses to retained loans	**1.20 %**	**12.41 %**	**1.34 %**	**2.95 %**	0.86 %	3.36 %	1.02 %	1.39 %
Allowance for loan losses to retained nonaccrual loans[c]	**67**	**NM**	**208**	**323**	87	NM	464	329
Allowance for loan losses to retained nonaccrual loans excluding credit card	**67**	**NM**	**208**	**120**	87	NM	464	187
Net charge-off rates	**0.06**	**2.93**	**0.16**	**0.55**	0.12	3.10	0.09	0.60

(a) Prior to the adoption of CECL, write-offs of PCI loans were recorded against the allowance for loan losses when actual losses for a pool exceeded estimated losses that were recorded as purchase accounting adjustments at the time of acquisition. A write-off of a PCI loan was recognized when the underlying loan was removed from a pool.

(b) Includes modified PCD loans and loans that have been modified or are reasonably expected to be modified in a TDR. Also includes risk-rated loans that have been placed on nonaccrual status for the wholesale portfolio segment. The asset-specific credit card allowance for loan losses modified or reasonably expected to be modified in a TDR is calculated based on the loans' original contractual interest rates and does not consider any incremental penalty rates.

(c) The Firm's policy is generally to exempt credit card loans from being placed on nonaccrual status as permitted by regulatory guidance.

(d) Excludes HTM securities, which had an allowance for credit losses of $78 million and a provision for credit losses of $68 million as of and for the year ended December 31, 2020.

INVESTMENT PORTFOLIO RISK MANAGEMENT

Investment portfolio risk is the risk associated with the loss of principal or a reduction in expected returns on investments arising from the investment securities portfolio or from principal investments. The investment securities portfolio is predominantly held by Treasury and CIO in connection with the Firm's balance sheet or asset-liability management objectives. Principal investments are predominantly privately-held non-traded financial instruments and are managed in the LOBs and Corporate. Investments are typically intended to be held over extended periods and, accordingly, the Firm has no expectation for short-term realized gains with respect to these investments.

Investment securities risk

Investment securities risk includes the exposure associated with a default in the payment of principal and interest. This risk is mitigated given that the investment securities portfolio held by Treasury and CIO is predominantly invested in high-quality securities. At December 31, 2020, the Treasury and CIO investment securities portfolio, net of allowance for credit losses, was $587.9 billion, and the average credit rating of the securities comprising the portfolio was AA+ (based upon external ratings where available and where not available, based primarily upon internal risk ratings). Refer to Corporate segment results on pages 83–84 and Note 10 for further information on the investment securities portfolio and internal risk ratings. Refer to Market Risk Management on pages 135–142 for further information on the market risk inherent in the portfolio. Refer to Liquidity Risk Management on pages 102–108 for further information on related liquidity risk.

Governance and oversight

Investment securities risks are governed by the Firm's Risk Appetite framework, and reviewed at the CTC Risk Committee with regular updates to the Board Risk Committee.

The Firm's independent control functions are responsible for reviewing the appropriateness of the carrying value of investment securities in accordance with relevant policies. Approved levels for investment securities are established for each risk category, including capital and credit risks.

Principal investment risk

Principal investments are typically privately held non-traded financial instruments representing ownership or other forms of junior capital and span multiple asset classes. These investments are made by dedicated investing businesses or as part of a broader business strategy. In general, principal investments include tax-oriented investments and investments made to enhance or accelerate the Firm's business strategies. The Firm's investments will continue to evolve in line with its strategies, including the Firm's commitment to support underserved communities and minority-owned businesses. The Firm's principal investments are managed by the LOBs and Corporate and are reflected within their respective financial results. The aggregate carrying values of the principal investment portfolios have not been significantly affected by recent market events as a result of the COVID-19 pandemic. However, the duration and severity of adverse macroeconomic conditions could subject certain principal investments to impairments, write-downs, or other negative impacts.

As of December 31, 2020 and 2019, the aggregate carrying values of the principal investment portfolios were $27.5 billion and $24.2 billion, respectively, which included tax-oriented investments (e.g., alternative energy and affordable housing investments) of $21.3 billion and $18.2 billion, respectively, and private equity, various debt and equity instruments, and real assets of $6.2 billion and $6.0 billion, respectively.

Governance and oversight

The Firm's approach to managing principal risk is consistent with the Firm's risk governance structure. A Firmwide risk policy framework exists for all principal investing activities and includes approval by executives who are independent from the investing businesses, as appropriate.

The Firm's independent control functions are responsible for reviewing the appropriateness of the carrying value of investments in accordance with relevant policies. As part of the risk governance structure, approved levels for investments are established and monitored for each relevant business or segment in order to manage the overall size of the portfolios. The Firm also conducts stress testing on these portfolios using specific scenarios that estimate losses based on significant market moves and/or other risk events.

Market risk is the risk associated with the effect of changes in market factors, such as interest and foreign exchange rates, equity and commodity prices, credit spreads or implied volatilities, on the value of assets and liabilities held for both the short and long term.

Market Risk Management

Market Risk Management monitors market risks throughout the Firm and defines market risk policies and procedures.

Market Risk Management seeks to manage risk, facilitate efficient risk/return decisions, reduce volatility in operating performance and provide transparency into the Firm's market risk profile for senior management, the Board of Directors and regulators. Market Risk Management is responsible for the following functions:

- Maintaining a market risk policy framework
- Independently measuring, monitoring and controlling LOB, Corporate, and Firmwide market risk
- Defining, approving and monitoring of limits
- Performing stress testing and qualitative risk assessments

Risk measurement

Measures used to capture market risk

There is no single measure to capture market risk and therefore Market Risk Management uses various metrics, both statistical and nonstatistical, to assess risk including:

- Value-at-risk (VaR)
- Stress testing
- Profit and loss drawdowns
- Earnings-at-risk
- Other sensitivity-based measures

Risk monitoring and control

Market risk exposure is managed primarily through a series of limits set in the context of the market environment and business strategy. In setting limits, Market Risk Management takes into consideration factors such as market volatility, product liquidity, accommodation of client business, and management experience. Market Risk Management maintains different levels of limits. Firm level limits include VaR and stress limits. Similarly, LOB and Corporate limits include VaR and stress limits and may be supplemented by certain nonstatistical risk measures such as profit and loss drawdowns. Limits may also be set within the LOBs and Corporate, as well as at the legal entity level.

Market Risk Management sets limits and regularly reviews and updates them as appropriate. Senior management is responsible for reviewing and approving certain of these risk limits on an ongoing basis. Limits that have not been reviewed within specified time periods by Market Risk Management are reported to senior management. The LOBs and Corporate are responsible for adhering to established limits against which exposures are monitored and reported.

Limit breaches are required to be reported in a timely manner to limit approvers, which include Market Risk Management and senior management. In the event of a breach, Market Risk Management consults with appropriate members of the Firm to determine the suitable course of action required to return the applicable positions to compliance, which may include a reduction in risk in order to remedy the breach or granting a temporary increase in limits to accommodate an expected increase in client activity and/or market volatility. Certain Firm, Corporate or LOB-level limit breaches are escalated as appropriate.

COVID-19 Pandemic

Market Risk Management continues to actively monitor the impact of the COVID-19 pandemic on market risk exposures by leveraging existing risk measures and controls.

Models used to measure market risk are inherently imprecise and are limited in their ability to measure certain risks or to predict losses. This imprecision may be heightened when sudden or severe shifts in market conditions occur, such as those observed at the onset of the COVID-19 pandemic. For additional discussion on model uncertainty refer to Estimations and Model Risk Management on page 151.

Market Risk Management periodically reviews the Firm's existing market risk measures to identify opportunities for enhancement, and to the extent appropriate, will calibrate those measures accordingly over time. This is increasingly important in periods of sustained, heightened market volatility.

The following table summarizes the predominant business activities and related market risks, as well as positions which give rise to market risk and certain measures used to capture those risks, for each LOB and Corporate.

In addition to the predominant business activities, each LOB and Corporate may engage in principal investing activities. To the extent principal investments are deemed market risk sensitive, they are reflected in relevant risk measures and captured in the table below. Refer to Investment Portfolio Risk Management on page 134 for additional discussion on principal investments.

LOBs and Corporate	Predominant business activities	Related market risks	Positions included in Risk Management VaR	Positions included in earnings-at-risk	Positions included in other sensitivity-based measures
CCB	• Services mortgage loans • Originates loans and takes deposits	• Risk from changes in the probability of newly originated mortgage commitments closing • Interest rate risk and prepayment risk	• Mortgage commitments, classified as derivatives • Warehouse loans that are fair value option elected, classified as loans – debt instruments • MSRs • Hedges of mortgage commitments, warehouse loans and MSRs, classified as derivatives • Interest-only and mortgage-backed securities, classified as trading assets debt instruments, and related hedges, classified as derivatives • Fair value option elected liabilities[(a)]	• Retained loan portfolio • Deposits	• Fair value option elected liabilities DVA[(a)]
CIB	• Makes markets and services clients across fixed income, foreign exchange, equities and commodities • Originates loans and takes deposits	• Risk of loss from adverse movements in market prices and implied volatilities across interest rate, foreign exchange, credit, commodity and equity instruments • Basis and correlation risk from changes in the way asset values move relative to one another • Interest rate risk and prepayment risk	• Trading assets/liabilities – debt and marketable equity instruments, and derivatives, including hedges of the retained loan portfolio • Certain securities purchased, loaned or sold under resale agreements and securities borrowed • Fair value option elected liabilities[(a)] • Derivative CVA and associated hedges • Marketable equity investments	• Retained loan portfolio • Deposits	• Privately held equity and other investments measured at fair value; and certain asset-backed fair value option elected loans • Derivatives FVA and fair value option elected liabilities DVA[(a)]
CB	• Originates loans and takes deposits	• Interest rate risk and prepayment risk	• Marketable equity investments[(b)]	• Retained loan portfolio • Deposits	
AWM	• Provides initial capital investments in products such as mutual funds and capital invested alongside third-party investors • Originates loans and takes deposits	• Risk from adverse movements in market factors (e.g., market prices, rates and credit spreads) • Interest rate risk and prepayment risk	• Debt securities held in advance of distribution to clients, classified as trading assets - debt instruments[(b)]	• Retained loan portfolio • Deposits	• Initial seed capital investments and related hedges, classified as derivatives • Certain deferred compensation and related hedges, classified as derivatives • Capital invested alongside third-party investors, typically in privately distributed collective vehicles managed by AWM (i.e., co-investments)
Corporate	• Manages the Firm's liquidity, funding, capital, structural interest rate and foreign exchange risks	• Structural interest rate risk from the Firm's traditional banking activities • Structural non-USD foreign exchange risks	• Derivative positions measured at fair value through noninterest revenue in earnings • Marketable equity investments	• Deposits with banks • Investment securities portfolio and related interest rate hedges • Long-term debt and related interest rate hedges	• Privately held equity and other investments measured at fair value • Foreign exchange exposure related to Firm-issued non-USD long-term debt ("LTD") and related hedges

(a) Reflects structured notes in Risk Management VaR and the DVA on structured notes in other sensitivity-based measures.
(b) The AWM and CB contributions to Firmwide average VaR were not material for the year ended December 31, 2020 and 2019.

Value-at-risk

JPMorgan Chase utilizes VaR, a statistical risk measure, to estimate the potential loss from adverse market moves in the current market environment. The Firm has a single VaR framework used as a basis for calculating Risk Management VaR and Regulatory VaR.

The framework is employed across the Firm using historical simulation based on data for the previous 12 months. The framework's approach assumes that historical changes in market values are representative of the distribution of potential outcomes in the immediate future. The Firm believes the use of Risk Management VaR provides a daily measure of risk that is closely aligned to risk management decisions made by the LOBs and Corporate and, along with other market risk measures, provides the appropriate information needed to respond to risk events.

The Firm's Risk Management VaR is calculated assuming a one-day holding period and an expected tail-loss methodology which approximates a 95% confidence level. Risk Management VaR provides a consistent framework to measure risk profiles and levels of diversification across product types and is used for aggregating risks and monitoring limits across businesses. VaR results are reported to senior management, the Board of Directors and regulators.

Under the Firm's Risk Management VaR methodology, assuming current changes in market values are consistent with the historical changes used in the simulation, the Firm would expect to incur VaR "backtesting exceptions," defined as losses greater than that predicted by VaR estimates, an average of five times every 100 trading days. The number of VaR backtesting exceptions observed can differ from the statistically expected number of backtesting exceptions if the current level of market volatility is materially different from the level of market volatility during the 12 months of historical data used in the VaR calculation.

Underlying the overall VaR model framework are individual VaR models that simulate historical market returns for individual risk factors and/or product types. To capture material market risks as part of the Firm's risk management framework, comprehensive VaR model calculations are performed daily for businesses whose activities give rise to market risk. These VaR models are granular and incorporate numerous risk factors and inputs to simulate daily changes in market values over the historical period; inputs are selected based on the risk profile of each portfolio, as sensitivities and historical time series used to generate daily market values may be different across product types or risk management systems. The VaR model results across all portfolios are aggregated at the Firm level.

As VaR is based on historical data, it is an imperfect measure of market risk exposure and potential future losses. In addition, based on their reliance on available historical data, limited time horizons, and other factors, VaR measures are inherently limited in their ability to measure certain risks and to predict losses, particularly those associated with market illiquidity and sudden or severe shifts in market conditions.

For certain products, specific risk parameters are not captured in VaR due to the lack of liquidity and availability of appropriate historical data. The Firm uses proxies to estimate the VaR for these and other products when daily time series are not available. It is likely that using an actual price-based time series for these products, if available, would affect the VaR results presented. The Firm therefore considers other nonstatistical measures such as stress testing, in addition to VaR, to capture and manage its market risk positions.

The daily market data used in VaR models may be different than the independent third-party data collected for VCG price testing in its monthly valuation process. For example, in cases where market prices are not observable, or where proxies are used in VaR historical time series, the data sources may differ. Refer to Valuation process in Note 2 for further information on the Firm's valuation process. As VaR model calculations require daily data and a consistent source for valuation, it may not be practical to use the data collected in the VCG monthly valuation process for VaR model calculations.

The Firm's VaR model calculations are periodically evaluated and enhanced in response to changes in the composition of the Firm's portfolios, changes in market conditions, improvements in the Firm's modeling techniques and measurements, and other factors. Such changes may affect historical comparisons of VaR results. Refer to Estimations and Model Risk Management on page 151 for information regarding model reviews and approvals.

The Firm calculates separately a daily aggregated VaR in accordance with regulatory rules ("Regulatory VaR"), which is used to derive the Firm's regulatory VaR-based capital requirements under Basel III. This Regulatory VaR model framework currently assumes a ten business-day holding period and an expected tail loss methodology which approximates a 99% confidence level. Regulatory VaR is applied to "covered" positions as defined by Basel III, which may be different than the positions included in the Firm's Risk Management VaR. For example, credit derivative hedges of accrual loans are included in the Firm's Risk Management VaR, while Regulatory VaR excludes these credit derivative hedges. In addition, in contrast to the Firm's Risk Management VaR, Regulatory VaR currently excludes the diversification benefit for certain VaR models.

Refer to JPMorgan Chase's Basel III Pillar 3 Regulatory Capital Disclosures reports, which are available on the Firm's website, for additional information on Regulatory VaR and the other components of market risk regulatory capital for the Firm (e.g., VaR-based measure, stressed VaR-based measure and the respective backtesting).

The table below shows the results of the Firm's Risk Management VaR measure using a 95% confidence level. VaR can vary significantly as positions change, market volatility fluctuates, and diversification benefits change.

Total VaR

As of or for the year ended December 31,	2020			2019		
(in millions)	Avg.	Min	Max	Avg.	Min	Max
CIB trading VaR by risk type						
Fixed income	**$ 98**	**$ 35**	**$ 156**	$ 40	$ 31	$ 50
Foreign exchange	**10**	**4**	**18**	7	4	15
Equities	**24**	**13**	**41**	20	13	31
Commodities and other	**28**	**7**	**47**	8	6	12
Diversification benefit to CIB trading VaR	**(67)** (a)	**NM** (b)	**NM** (b)	(33) (a)	NM (b)	NM (b)
CIB trading VaR	**93**	**32** (b)	**160** (b)	42	29 (b)	61 (b)
Credit portfolio VaR	**16**	**3**	**28**	5	3	7
Diversification benefit to CIB VaR	**(17)** (a)	**NM** (b)	**NM** (b)	(5) (a)	NM (b)	NM (b)
CIB VaR	**92**	**31** (b)	**162** (b)	42	29 (b)	63 (b)
CCB VaR	**5**	**1**	**12**	5	1	11
Corporate and other LOB VaR	**19**	**9**	**82** (c)	10	9	13
Diversification benefit to other VaR	**(4)** (a)	**NM** (b)	**NM** (b)	(4) (a)	NM (b)	NM (b)
Other VaR	**20**	**10** (b)	**82** (b)	11	8 (b)	17 (b)
Diversification benefit to CIB and other VaR	**(17)** (a)	**NM** (b)	**NM** (b)	(10) (a)	NM (b)	NM (b)
Total VaR	**$ 95**	**$ 32** (b)	**$ 164** (b)	$ 43	$ 30 (b)	$ 65 (b)

(a) Diversification benefit represents the difference between the portfolio VaR and the sum of its individual components. This reflects the non-additive nature of VaR due to imperfect correlation across LOBs, Corporate, and risk types.
(b) The maximum and minimum VaR for each portfolio may have occurred on different trading days than the components and consequently diversification benefit is not meaningful.
(c) Maximum Corporate and other LOB VaR was higher than the prior year, due to increases in the fourth quarter of 2020 driven by a private equity position that became publicly traded at the end of the third quarter of 2020.

Generally, average VaR and maximum VaR across risk types and LOBs were higher due to increased volatility that occurred at the onset of the COVID-19 pandemic, which remains in the one-year historical look-back period. As a result average total VaR increased by $52 million for the year-ended December 31, 2020 when compared with the prior year driven by the fixed income and commodities risk types.

Effective January 1, 2020, the Firm refined the scope of VaR to exclude positions related to the risk management of interest rate exposure from changes in the Firm's own credit spread on fair value option elected liabilities, and included these positions in other sensitivity-based measures. Additionally, effective July 1, 2020, the Firm refined the scope of VaR to exclude certain asset-backed fair value option elected loans, and included them in other sensitivity-based measures to more effectively measure the risk from these loans. In the absence of these refinements, the average Total VaR and each of the components would have been higher by the amounts reported in the following table:

(in millions)	Amount by which reported average VaR would have been higher for the year ended December 31, 2020
CIB fixed income VaR	$ 9
CIB trading VaR	7
CIB VaR	9
Total VaR	8

VaR backtesting

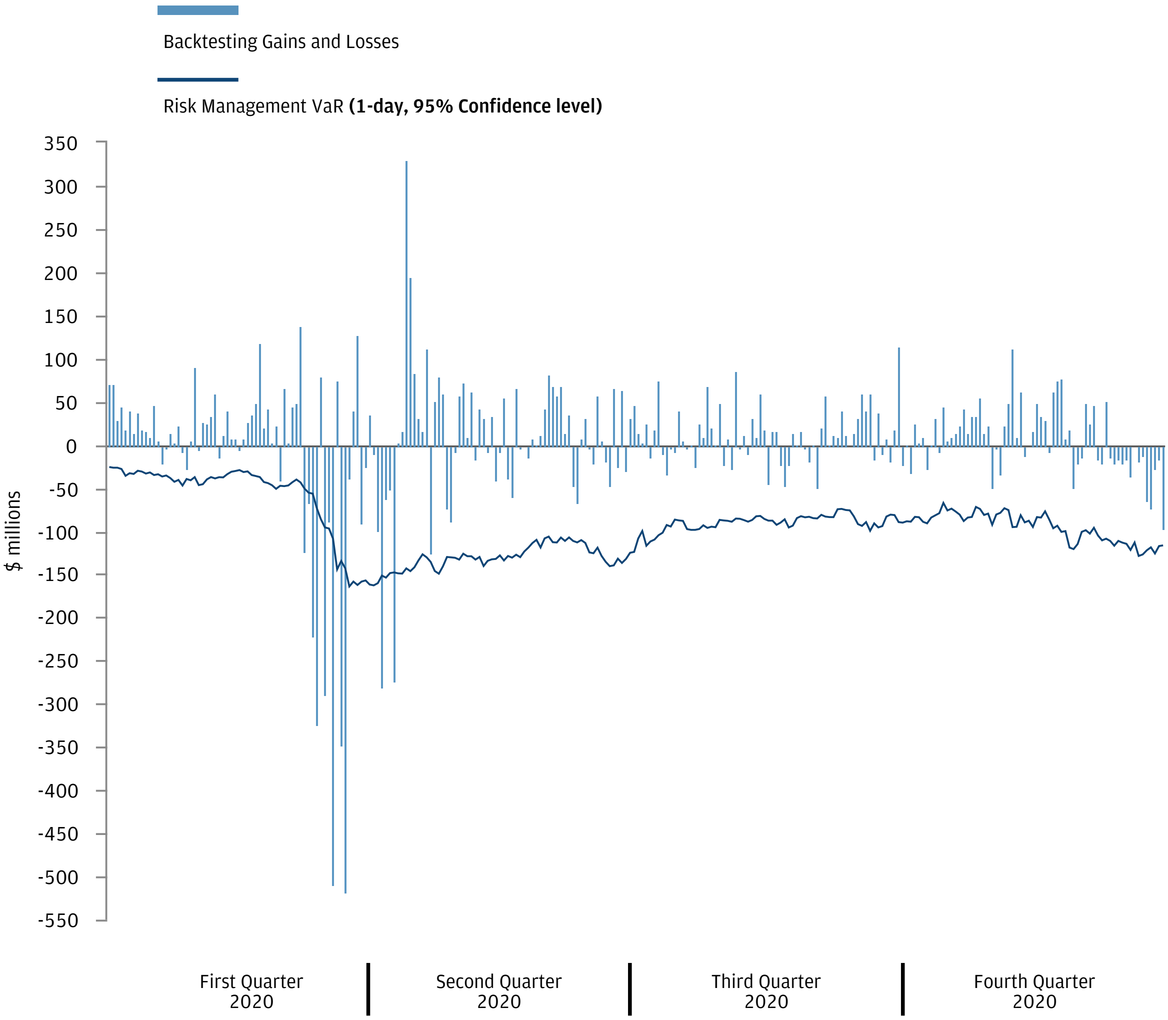
The Firm performs daily VaR model backtesting, which compares the daily Risk Management VaR results with the daily gains and losses that are utilized for VaR backtesting purposes. The gains and losses in the chart below do not reflect the Firm's revenue results as they exclude select components of total net revenue, such as those associated with the execution of new transactions (i.e., intraday client-driven trading and intraday risk management activities), fees, commissions, certain valuation adjustments and net interest income. These excluded components of total net revenue may more than offset backtesting gains and losses on a particular day. The definition of backtesting gains and losses above is consistent with the requirements for backtesting under Basel III capital rules.

The following chart compares Firmwide daily backtesting gains and losses with the Firm's Risk Management VaR for the year ended December 31, 2020. The results in the chart below differ from the results of backtesting disclosed in the Market Risk section of the Firm's Basel III Pillar 3 Regulatory Capital Disclosures reports, which are based on Regulatory VaR applied to the Firm's covered positions.

For the year ended December 31, 2020, the Firm posted backtesting gains on 162 of the 260 days, and observed 10 VaR backtesting exceptions, which were predominantly driven by volatility at the onset of the COVID-19 pandemic that was materially higher than the levels realized in the historical data used for the VaR calculation. Firmwide backtesting loss days can differ from the loss days for which Fixed Income Markets and Equity Markets posted losses, as disclosed in CIB Markets revenue, as the population of positions which compose each metric are different and due to the exclusion of select components of total net revenue in backtesting gains and losses as described above. For more information on CIB Markets revenue, refer to pages 74-75.

Daily Risk Management VaR Backtesting Results

Year ended December 31, 2020



Other risk measures

Stress testing

Along with VaR, stress testing is an important tool used to assess risk. While VaR reflects the risk of loss due to adverse changes in markets using recent historical market behavior, stress testing reflects the risk of loss from hypothetical changes in the value of market risk sensitive positions applied simultaneously. Stress testing measures the Firm's vulnerability to losses under a range of stressed but possible economic and market scenarios. The results are used to understand the exposures responsible for those potential losses and are measured against limits.

The Firm's stress framework covers market risk sensitive positions in the LOBs and Corporate. The framework is used to calculate multiple magnitudes of potential stress for both market rallies and market sell-offs, assuming significant changes in market factors such as credit spreads, equity prices, interest rates, currency rates and commodity prices, and combines them in multiple ways to capture an array of hypothetical economic and market scenarios.

The Firm generates a number of scenarios that focus on tail events in specific asset classes and geographies, including how the event may impact multiple market factors simultaneously. Scenarios also incorporate specific idiosyncratic risks and stress basis risk between different products. The flexibility in the stress framework allows the Firm to construct new scenarios that can test the outcomes against possible future stress events. Stress testing results are reported on a regular basis to senior management of the Firm, as appropriate.

Stress scenarios are governed by an overall stress framework and are subject to the standards outlined in the Firm's policies related to model risk management. Significant changes to the framework are reviewed as appropriate.

The Firm's stress testing framework is utilized in calculating the Firm's CCAR and other stress test results, which are reported to the Board of Directors. In addition, stress testing results are incorporated into the Firm's Risk Appetite framework, and are reported periodically to the Board Risk Committee.

Profit and loss drawdowns

Profit and loss drawdowns are used to highlight trading losses above certain levels of risk tolerance. A profit and loss drawdown is a decline in revenue from its year-to-date peak level.

Earnings-at-risk

The effect of interest rate exposure on the Firm's reported net income is important as interest rate risk represents one of the Firm's significant market risks. Interest rate risk arises not only from trading activities but also from the Firm's traditional banking activities, which include extension of loans and credit facilities, taking deposits and issuing debt as well as from the investment securities portfolio. Refer to the table on page 136 for a summary by LOB and Corporate, identifying positions included in earnings-at-risk.

The CTC Risk Committee establishes the Firm's structural interest rate risk policy and related limits, which are subject to approval by the Board Risk Committee. Treasury and CIO, working in partnership with the LOBs, calculates the Firm's structural interest rate risk profile and reviews it with senior management, including the CTC Risk Committee. In addition, oversight of structural interest rate risk is managed through a dedicated risk function reporting to the CTC CRO. This risk function is responsible for providing independent oversight and governance around assumptions and establishing and monitoring limits for structural interest rate risk. The Firm manages structural interest rate risk generally through its investment securities portfolio and interest rate derivatives.

Structural interest rate risk can occur due to a variety of factors, including:

- Differences in timing among the maturity or repricing of assets, liabilities and off-balance sheet instruments
- Differences in the amounts of assets, liabilities and off-balance sheet instruments that are maturing or repricing at the same time
- Differences in the amounts by which short-term and long-term market interest rates change (for example, changes in the slope of the yield curve)
- The impact of changes in the maturity of various assets, liabilities or off-balance sheet instruments as interest rates change

The Firm manages interest rate exposure related to its assets and liabilities on a consolidated, Firmwide basis. Business units transfer their interest rate risk to Treasury and CIO through funds transfer pricing, which takes into account the elements of interest rate exposure that can be risk-managed in financial markets. These elements include asset and liability balances and contractual rates of interest, contractual principal payment schedules, expected prepayment experience, interest rate reset dates and maturities, rate indices used for repricing, and any interest rate ceilings or floors for adjustable rate products.

One way the Firm evaluates its structural interest rate risk is through earnings-at-risk. Earnings-at-risk estimates the Firm's interest rate exposure for a given interest rate scenario. It is presented as a sensitivity to a baseline, which includes net interest income and certain interest rate sensitive fees. The baseline uses market interest rates and in the case of deposits, pricing assumptions. The Firm conducts simulations of changes to this baseline for interest rate-sensitive assets and liabilities denominated in U.S. dollars and other currencies ("non-U.S. dollar" currencies). These simulations primarily include retained loans, deposits, deposits with banks, investment securities, long-term debt and any related interest rate hedges, and funds transfer pricing of positions in risk management VaR and other sensitivity-based measures as described on page 136.

Earnings-at-risk scenarios estimate the potential change to a net interest income baseline, over the following 12 months utilizing multiple assumptions. These scenarios include a parallel shift involving changes to both short-term and long-term rates by an equal amount; a steeper yield curve involving holding short-term rates constant and increasing long-term rates; and a flatter yield curve involving increasing short-term rates and holding long-term rates constant. These scenarios consider many different factors, including:

- The impact on exposures as a result of instantaneous changes in interest rates from baseline rates.
- Forecasted balance sheet, as well as modeled prepayment and reinvestment behavior, but do not include assumptions about actions that could be taken by the Firm or its clients and customers in response to any such instantaneous rate changes. Mortgage prepayment assumptions are based on the interest rates used in the scenarios compared with underlying contractual rates, the time since origination, and other factors which are updated periodically based on historical experience.
- The pricing sensitivity of deposits, known as deposit betas, represent the amount by which deposit rates paid could change upon a given change in market interest rates over the cycle. The deposit rates paid in these scenarios may differ from actual deposit rates paid, due to repricing lags and other factors.

The Firm's earnings-at-risk scenarios are periodically evaluated and enhanced in response to changes in the composition of the Firm's balance sheet, changes in market conditions, improvements in the Firm's simulation and other factors. While a relevant measure of the Firm's interest rate exposure, the earnings at risk analysis does not represent a forecast of the Firm's net interest income (Refer to Outlook on page 49 for additional information).

The Firm's U.S. dollar sensitivities are presented in the table below.

December 31, (in billions)	2020	2019
Parallel shift:		
+100 bps shift in rates	**$ 6.9**	$ 0.3
Steeper yield curve:		
+100 bps shift in long-term rates	**2.4**	1.2
Flatter yield curve:		
+100 bps shift in short-term rates	**4.5**	(0.9)

The change in the Firm's U.S. dollar sensitivities as of December 31, 2020 compared to December 31, 2019 reflected updates to the Firm's baseline for lower short-term and long-term rates as well as the impact of changes in the Firm's balance sheet. In addition, during the fourth quarter of 2020 as part of the Firm's continuous evaluation and periodic enhancement to its earnings-at-risk calculations, the Firm updated the deposit rates paid betas for consumer deposit products based upon observed pricing during the most recent economic cycle. In the absence of this update, the Firm's U.S. dollar sensitivities as of December 31, 2020 would have been lower by $2.0 billion to the +100bps shift in short-term and parallel rate scenarios.

The Firm's sensitivity to rates is primarily a result of assets repricing at a faster pace than deposits.

Based upon current and implied market rates as of December 31, 2020, scenarios reflecting lower rates could result in negative interest rates. The U.S. has never experienced an interest rate environment where the Federal Reserve has a negative interest rate policy. While the impact of negative interest rates on the Firm's earnings-at-risk would vary by scenario, a parallel shift downward of up to 100bps would negatively impact net interest income. In a negative interest rate environment, the modeling assumptions used for certain assets and liabilities require additional management judgment and therefore, the actual outcomes may differ from these assumptions.

The Firm's non-U.S. dollar sensitivities are presented in the table below.

December 31, (in billions)	2020	2019
Parallel shift:		
+100 bps shift in rates	**$ 0.9**	$ 0.5
Flatter yield curve:		
+100 bps shift in short-term rates	**0.8**	0.5

The results of the non-U.S. dollar interest rate scenario involving a steeper yield curve with long-term rates rising by 100 basis points and short-term rates staying at current levels were not material to the Firm's earnings-at-risk at December 31, 2020 and 2019.

Non-U.S. dollar foreign exchange risk

Non-U.S. dollar FX risk is the risk that changes in foreign exchange rates affect the value of the Firm's assets or liabilities or future results. The Firm has structural non-U.S. dollar FX exposures arising from capital investments, forecasted expense and revenue, the investment securities portfolio and non-U.S. dollar-denominated debt issuance. Treasury and CIO, working in partnership with the LOBs, primarily manage these risks on behalf of the Firm. Treasury and CIO may hedge certain of these risks using derivatives.

Other sensitivity-based measures

The Firm quantifies the market risk of certain debt and equity and funding activities by assessing the potential impact on net revenue, other comprehensive income ("OCI") and noninterest expense due to changes in relevant market variables. Refer to the table Predominant business activities that give rise to market risk on page 136 for additional information on the positions captured in other sensitivity-based measures.

The table below represents the potential impact to net revenue, OCI or noninterest expense for market risk sensitive instruments that are not included in VaR or earnings-at-risk. Where appropriate, instruments used for hedging purposes are reported net of the positions being hedged. The sensitivities disclosed in the table below may not be representative of the actual gain or loss that would have been realized at December 31, 2020 and 2019, as the movement in market parameters across maturities may vary and are not intended to imply management's expectation of future changes in these sensitivities.

Year ended December 31, **Gain/(loss)** (in millions) **Activity**	**Description**	**Sensitivity measure**	**2020**	**2019**
Debt and equity[(a)]				
Asset Management activities	Consists of seed capital and related hedges; fund co-investments[(b)]; and certain deferred compensation and related hedges[(c)]	10% decline in market value	$ (48)	$ (68)
Other debt and equity	Consists of certain asset-backed fair value option elected loans, privately held equity and other investments held at fair value[(b)]	10% decline in market value	(919)	(867) [(e)]
Funding activities				
Non-USD LTD cross-currency basis	Represents the basis risk on derivatives used to hedge the foreign exchange risk on the non-USD LTD[(d)]	1 basis point parallel tightening of cross currency basis	(16)	(17)
Non-USD LTD hedges foreign currency ("FX") exposure	Primarily represents the foreign exchange revaluation on the fair value of the derivative hedges[(d)]	10% depreciation of currency	13	15
Derivatives – funding spread risk	Impact of changes in the spread related to derivatives FVA[(b)]	1 basis point parallel increase in spread	(4)	(5)
Fair value option elected liabilities – funding spread risk	Impact of changes in the spread related to fair value option elected liabilities DVA[(d)]	1 basis point parallel increase in spread	33	29
Fair value option elected liabilities – interest rate sensitivity	Interest rate sensitivity on fair value option liabilities resulting from a change in the Firm's own credit spread[(d)]	1 basis point parallel increase in spread	(3)	(2)
	Interest rate sensitivity related to risk management of changes in the Firm's own credit spread on fair value option liabilities[(b)]	1 basis point parallel increase in spread	3	2

(a) Excludes equity securities without readily determinable fair values that are measured under the measurement alternative. Refer to Note 2 for additional information.
(b) Impact recognized through net revenue.
(c) In the second quarter of 2020, the Firm refined the approach for risk management of certain deferred compensation, which is recognized through noninterest expense. As a result, certain deferred compensation and related hedges are now included in other sensitivity-based measures.
(d) Impact recognized through OCI.
(e) Prior-period amount has been revised to conform with the current presentation. In the absence of the scope refinement, Other debt and equity would have been $(203) million and $(192) million for the periods ending December 31, 2020 and 2019, respectively. Refer to Total VaR on page 138 for additional information.

The Firm, through its LOBs and Corporate, may be exposed to country risk resulting from financial, economic, political or other significant developments which adversely affect the value of the Firm's exposures related to a particular country or set of countries. The Country Risk Management group actively monitors the various portfolios which may be impacted by these developments and measures the extent to which the Firm's exposures are diversified given the Firm's strategy and risk tolerance relative to a country.

Organization and management

Country Risk Management is an independent risk management function that assesses, manages and monitors country risk originated across the Firm.

The Firm's country risk management function includes the following activities:

- Maintaining policies, procedures and standards consistent with a comprehensive country risk framework
- Assigning sovereign ratings, assessing country risks and establishing risk tolerance relative to a country
- Measuring and monitoring country risk exposure and stress across the Firm
- Managing and approving country limits and reporting trends and limit breaches to senior management
- Developing surveillance tools, such as signaling models and ratings indicators, for early identification of potential country risk concerns
- Providing country risk scenario analysis

Sources and measurement

The Firm is exposed to country risk through its lending and deposits, investing, and market-making activities, whether cross-border or locally funded. Country exposure includes activity with both government and private-sector entities in a country.

Under the Firm's internal country risk management approach, attribution of exposure to an individual country is based on the country where the largest proportion of the assets of the counterparty, issuer, obligor or guarantor are located or where the largest proportion of its revenue is derived, which may be different than the domicile (i.e. legal residence) or country of incorporation.

Individual country exposures reflect an aggregation of the Firm's risk to an immediate default, with zero recovery, of the counterparties, issuers, obligors or guarantors attributed to that country. Activities which result in contingent or indirect exposure to a country are not included in the country exposure measure (for example, providing clearing services or secondary exposure to collateral on securities financing receivables).

Assumptions are sometimes required in determining the measurement and allocation of country exposure, particularly in the case of certain non-linear or index products, or where the nature of the counterparty, issuer, obligor or guarantor is not suitable for attribution to an individual country. The use of different measurement approaches or assumptions could affect the amount of reported country exposure.

Under the Firm's internal country risk measurement framework:

- Lending exposures are measured at the total committed amount (funded and unfunded), net of the allowance for credit losses and eligible cash and marketable securities collateral received
- Deposits are measured as the cash balances placed with central and commercial banks
- Securities financing exposures are measured at their receivable balance, net of eligible collateral received
- Debt and equity securities are measured at the fair value of all positions, including both long and short positions
- Counterparty exposure on derivative receivables is measured at the derivative's fair value, net of the fair value of the eligible collateral received
- Credit derivatives protection purchased and sold is reported based on the underlying reference entity and is measured at the notional amount of protection purchased or sold, net of the fair value of the recognized derivative receivable or payable. Credit derivatives protection purchased and sold in the Firm's market-making activities is measured on a net basis, as such activities often result in selling and purchasing protection related to the same underlying reference entity; this reflects the manner in which the Firm manages these exposures

The Firm's internal country risk reporting differs from the reporting provided under the FFIEC bank regulatory requirements. Refer to Cross-border outstandings on page 318 of the 2020 Form 10-K for further information on the FFIEC's reporting methodology.

Stress testing

Stress testing is an important component of the Firm's country risk management framework, which aims to estimate and limit losses arising from a country crisis by measuring the impact of adverse asset price movements to a country based on market shocks combined with counterparty specific assumptions. Country Risk Management periodically designs and runs tailored stress scenarios to test vulnerabilities to individual countries or sets of countries in response to specific or potential market events, sector performance concerns, sovereign actions and geopolitical risks. These tailored stress results are used to inform potential risk reduction across the Firm, as necessary.

COVID-19 Pandemic

Country Risk Management continues to monitor the impact of the COVID-19 pandemic, leveraging existing stress testing, exposure reporting and controls, as well as tailored analysis, to assess the extent to which individual countries may be adversely impacted.

Risk reporting

Country exposure and stress are measured and reported regularly, and used by Country Risk Management to identify trends, and monitor high usages and breaches against limits.

For country risk management purposes, the Firm may report exposure to jurisdictions that are not fully autonomous, including Special Administrative Regions ("SAR") and dependent territories, separately from the independent sovereign states with which they are associated.

The following table presents the Firm's top 20 exposures by country (excluding the U.S.) as of December 31, 2020, and their comparative exposures as of December 31, 2019. The selection of countries represents the Firm's largest total exposures by individual country, based on the Firm's internal country risk management approach, and does not represent the Firm's view of any actual or potentially adverse credit conditions. Country exposures may fluctuate from period to period due to client activity and market flows.

The overall increase in top 20 exposures was largely driven by client activity and growth in client deposits, relative to the period ending December 31, 2019. This resulted in an increase in cash placements with the central banks of Germany and the United Kingdom.

Top 20 country exposures (excluding the U.S.)[(a)]

December 31, (in billions)	2020				2019[(f)]
	Lending and deposits[(c)]	Trading and investing[(d)]	Other[(e)]	Total exposure	Total exposure
Germany	$ 120.8	$ 5.8	$ 0.6	$ 127.2	$ 51.6
United Kingdom	57.2	9.4	1.8	68.4	42.4
Japan	36.7	8.6	0.3	45.6	43.8
China	9.7	9.9	1.6	21.2	19.2
France	13.4	4.6	0.8	18.8	18.1
Switzerland	14.7	0.5	3.5	18.7	18.3
Australia	9.9	5.7	0.3	15.9	11.7
Canada	13.4	0.9	0.2	14.5	13.2
Luxembourg	11.1	1.3	–	12.4	12.9
Brazil	4.2	6.6	–	10.8	7.2
India	3.9	5.1	1.5	10.5	11.3
South Korea	5.4	4.3	0.4	10.1	6.4
Italy	4.7	4.7	0.3	9.7	6.8
Singapore	4.0	2.7	2.0	8.7	6.8
Netherlands[(b)]	5.4	0.1	2.2	7.7	5.8
Hong Kong SAR	3.7	1.9	0.6	6.2	5.1
Spain	4.1	1.6	0.1	5.8	5.8
Saudi Arabia	4.9	0.9	–	5.8	5.2
Mexico	3.9	1.0	–	4.9	4.7
Sweden	5.4	(1.1)	–	4.3	1.1

(a) Country exposures presented in the table reflect 90% and 87% of total Firmwide non-U.S. exposure, where exposure is attributed to an individual country, at December 31, 2020 and 2019, respectively.
(b) In the fourth quarter of 2020, Country Risk Management determined that the exposure for certain commodities contracts corresponds to an EU-wide risk and should not be attributed to the individual country of registration, previously the Netherlands. As such, the exposure is no longer included and the prior-period amount has been revised to conform with the current presentation.
(c) Lending and deposits includes loans and accrued interest receivable, lending-related commitments (net of eligible collateral and the allowance for credit losses), deposits with banks (including central banks), acceptances, other monetary assets, and issued letters of credit net of participations. Excludes intra-day and operating exposures, such as those from settlement and clearing activities.
(d) Includes market-making inventory, Investment securities, and counterparty exposure on derivative and securities financings net of eligible collateral and hedging. Includes exposure from single reference entity ("single-name"), index and other multiple reference entity transactions for which one or more of the underlying reference entities is in a country listed in the above table.
(e) Predominantly includes physical commodity inventory.
(f) The country rankings presented in the table as of December 31, 2019, are based on the country rankings of the corresponding exposures at December 31, 2020, not actual rankings of such exposures at December 31, 2019.

Operational risk is the risk of an adverse outcome resulting from inadequate or failed internal processes or systems; human factors; or external events impacting the Firm's processes or systems; Operational Risk includes compliance, conduct, legal, and estimations and model risk. Operational risk is inherent in the Firm's activities and can manifest itself in various ways, including fraudulent acts, business interruptions, cyber attacks, inappropriate employee behavior, failure to comply with applicable laws and regulations or failure of vendors to perform in accordance with their agreements. Operational Risk Management attempts to manage operational risk at appropriate levels in light of the Firm's financial position, the characteristics of its businesses, and the markets and regulatory environments in which it operates.

Operational Risk Management Framework

The Firm's Compliance, Conduct, and Operational Risk ("CCOR") Management Framework is designed to enable the Firm to govern, identify, measure, monitor and test, manage and report on the Firm's operational risk.

Operational Risk Governance

The LOBs and Corporate are responsible for the management of operational risk. The Control Management Organization, which consists of control managers within each LOB and Corporate, is responsible for the day-to-day execution of the CCOR Framework and the evaluation of the effectiveness of their control environments to determine where targeted remediation efforts may be required.

The Firm's Global Chief Compliance Officer ("CCO") and FRE for Operational Risk is responsible for defining the CCOR Management Framework and establishing minimum standards for its execution. Operational Risk Officers ("OROs") report to both the LOB CROs and to the FRE for Operational Risk, and are independent of the respective businesses or functions they oversee.

The Firm's CCOR Management policy establishes the CCOR Management Framework for the Firm. The CCOR Management Framework is articulated in the Risk Governance and Oversight Policy which is reviewed and approved by the Board Risk Committee periodically.

Operational Risk identification

The Firm utilizes a structured risk and control self-assessment process that is executed by the LOBs and Corporate. As part of this process, the LOBs and Corporate evaluate the effectiveness of their control environment to assess where controls have failed, and to determine where remediation efforts may be required. The Firm's Operational Risk and Compliance organization ("Operational Risk and Compliance") provides oversight of these activities and may also perform independent assessments of significant operational risk events and areas of concentrated or emerging risk.

Operational Risk Measurement

Operational Risk and Compliance performs independent risk assessments of the Firm's operational risks, which includes assessing the effectiveness of the control environment and reporting the results to senior management.

In addition, operational risk measurement includes operational risk-based capital and operational risk loss projections under both baseline and stressed conditions.

The primary component of the operational risk capital estimate is the Loss Distribution Approach ("LDA") statistical model, which simulates the frequency and severity of future operational risk loss projections based on historical data. The LDA model is used to estimate an aggregate operational risk loss over a one-year time horizon, at a 99.9% confidence level. The LDA model incorporates actual internal operational risk losses in the quarter following the period in which those losses were realized, and the calculation generally continues to reflect such losses even after the issues or business activities giving rise to the losses have been remediated or reduced.

As required under the Basel III capital framework, the Firm's operational risk-based capital methodology, which uses the Advanced Measurement Approach ("AMA"), incorporates internal and external losses as well as management's view of tail risk captured through operational risk scenario analysis, and evaluation of key business environment and internal control metrics. The Firm does not reflect the impact of insurance in its AMA estimate of operational risk capital.

The Firm considers the impact of stressed economic conditions on operational risk losses and develops a forward looking view of material operational risk events that may occur in a stressed environment. The Firm's operational risk stress testing framework is utilized in calculating results for the Firm's CCAR and other stress testing processes.

Refer to Capital Risk Management section, on pages 91-101 for information related to operational risk RWA, and CCAR.

Operational Risk Monitoring and testing

The results of risk assessments performed by Operational Risk and Compliance are leveraged as one of the key criteria in the independent monitoring and testing of the LOBs and Corporate's compliance with laws and regulation. Through monitoring and testing, Operational Risk and Compliance independently identify areas of operational risk and tests the effectiveness of controls within the LOBs and Corporate.

Management of Operational Risk

The operational risk areas or issues identified through monitoring and testing are escalated to the LOBs and Corporate to be remediated through action plans, as needed, to mitigate operational risk. Operational Risk and

Compliance may advise the LOBs and Corporate in the development and implementation of action plans.

Operational Risk Reporting
Escalation of risks is a fundamental expectation for employees at the Firm. Risks identified by Operational Risk and Compliance are escalated to the appropriate LOB and Corporate Control Committees, as needed. Operational Risk and Compliance has established standards to ensure that consistent operational risk reporting and operational risk reports are produced on a Firmwide basis as well as by the LOBs and Corporate. Reporting includes the evaluation of key risk indicators and key performance indicators against established thresholds as well as the assessment of different types of operational risk against stated risk appetite. The standards reinforce escalation protocols to senior management and to the Board of Directors.

COVID-19 Pandemic
Under the CCOR Management Framework, Operational Risk and Compliance monitors and assesses COVID-19 related legal and regulatory developments associated with the Firm's financial products and services offered to clients and customers as part of the existing change management process. The Firm will continue to review and assess the impact of the pandemic on operational risk and implement adequate measures as needed.

Subcategories and examples of operational risks
Operational risk can manifest itself in various ways. Operational risk subcategories such as Compliance risk, Conduct risk, Legal risk, and Estimations and Model risk as well as other operational risks, can lead to losses which are captured through the Firm's operational risk measurement processes. Refer to pages 148, 149, 150 and 151, respectively for more information on Compliance, Conduct, Legal, and Estimations and Model risk. Details on other select examples of operational risks are provided below.

Cybersecurity risk
Cybersecurity risk is the risk of the Firm's exposure to harm or loss resulting from misuse or abuse of technology by malicious actors. Cybersecurity risk is an important and continuously evolving focus for the Firm. Significant resources are devoted to protecting and enhancing the security of computer systems, software, networks and other technology assets. The Firm's security efforts are designed to protect against, among other things, cybersecurity attacks by unauthorized parties attempting to obtain access to confidential information, destroy data, disrupt or degrade service, sabotage systems or cause other damage.

Ongoing business expansions may expose the Firm to potential new threats as well as expanded regulatory scrutiny including the introduction of new cybersecurity requirements. The Firm continues to make significant investments in enhancing its cyber defense capabilities and to strengthen its partnerships with the appropriate government and law enforcement agencies and other businesses in order to understand the full spectrum of cybersecurity risks in the operating environment, enhance defenses and improve resiliency against cybersecurity threats. The Firm actively participates in discussions of cybersecurity risks with law enforcement, government officials, peer and industry groups, and has significantly increased efforts to educate employees and certain clients on the topic of cybersecurity risks.

Third parties with which the Firm does business or that facilitate the Firm's business activities (e.g., vendors, supply chain, exchanges, clearing houses, central depositories, and financial intermediaries) are also sources of cybersecurity risk to the Firm. Third party cybersecurity incidents such as system breakdowns or failures, misconduct by the employees of such parties, or cyberattacks could affect their ability to deliver a product or service to the Firm or result in lost or compromised information of the Firm or its clients. Clients are also sources of cybersecurity risk to the Firm, particularly when their activities and systems are beyond the Firm's own security and control systems. As a result, the Firm engages in regular and ongoing discussions with certain vendors and clients regarding cybersecurity risks and opportunities to improve security. However, where cybersecurity incidents occur as a result of client failures to maintain the security of their own systems and processes, clients are responsible for losses incurred.

To protect the confidentiality, integrity and availability of the Firm's infrastructure, resources and information, the Firm maintains a cybersecurity program designed to prevent, detect, and respond to cyberattacks. The Audit Committee is updated periodically on the Firm's Information Security Program, recommended changes, cybersecurity policies and practices, ongoing efforts to improve security, as well as its efforts regarding significant cybersecurity events. In addition, the Firm has a cybersecurity incident response plan ("IRP") designed to enable the Firm to respond to attempted cybersecurity incidents, coordinate such responses with law enforcement and other government agencies, and notify clients and customers, as applicable. Among other key focus areas, the IRP is designed to mitigate the risk of insider trading connected to a cybersecurity incident, and includes various escalation points. Due to the impact of COVID-19, the Firm increased the use of remote access and also video conferencing solutions provided by third parties to facilitate remote work. As a result the Firm took additional precautionary measures to mitigate cybersecurity risks.

The Cybersecurity and Technology Control functions are responsible for governance and oversight of the Firm's Information Security Program. In partnership with the Firm's LOBs and Corporate, the Cybersecurity and Technology Control organization identifies information security risk issues and oversees programs for the technological protection of the Firm's information resources including applications, infrastructure as well as confidential and personal information related to the Firm's customers. The Cybersecurity and Technology organization consists of business aligned information security managers that are supported within the organization by the following products that execute the Information Security Program for the Firm:

- Cyber Defense & Fraud

- Data Management, Protection & Privacy
- Identity & Access Management
- Governance & Controls
- Production Management & Resiliency
- Software & Platform Enablement

The Global Cybersecurity and Technology Control governance structure is designed to identify, escalate, and mitigate information security risks. This structure uses key governance forums to disseminate information and monitor technology efforts. These forums are established at multiple levels throughout the Firm and include representatives from each LOB and Corporate. Reports containing overviews of key technology risks and efforts to enhance related controls are produced for these forums, and are reviewed by management at multiple levels. The forums are used to escalate information security risks or other matters as appropriate.

The IRM function provides oversight of the activities designed to identify, assess, measure, and mitigate cybersecurity risk.

The Firm's Security Awareness Program includes training that reinforces the Firm's Information Technology Risk and Security Management policies, standards and practices, as well as the expectation that employees comply with these policies. The Security Awareness Program engages personnel through training on how to identify potential cybersecurity risks and protect the Firm's resources and information. This training is mandatory for all employees globally on a periodic basis, and it is supplemented by Firmwide testing initiatives, including periodic phishing tests. Finally, the Firm's Global Privacy Program requires all employees to take periodic awareness training on data privacy. This privacy-focused training includes information about confidentiality and security, as well as responding to unauthorized access to or use of information.

Business and technology resiliency risk
Business disruptions can occur due to forces beyond the Firm's control such as the spread of infectious diseases or pandemics, severe weather, power or telecommunications loss, accidents, failure of a third party to provide expected services, cyberattack, flooding, transit strikes, terrorism, health emergencies. The safety of the Firm's employees and customers is of the highest priority. The Firmwide resiliency program is intended to enable the Firm to recover its critical business functions and supporting assets (i.e., staff, technology and facilities) in the event of a business interruption. The program includes governance, awareness training, and testing of recovery strategies, as well as strategic and tactical initiatives to identify, assess, and manage business interruption and public safety risks. The strength and proficiency of the Firmwide resiliency program has played an integral role in maintaining the Firm's business operations during and after various events.

Payment fraud risk
Payment fraud risk is the risk of external and internal parties unlawfully obtaining personal monetary benefit through misdirected or otherwise improper payment. The risk of payment fraud remains at a heightened level across the industry, particularly during the current COVID-19 pandemic due to the use of contingent forms of payment authentication methods, scams involving the pandemic being perpetrated including an increase in the level of fraud attempts against consumers. The complexities of these incidents and the strategies used by perpetrators continue to evolve. The Firm employs various controls for managing payment fraud risk as well as providing employee and client education and awareness trainings. The Firm's monitoring of customer behavior to detect new fraud strategies is periodically evaluated and enhanced in an effort to mitigate these fraud risks.

Third-party outsourcing risk
The Firm's Third-Party Oversight ("TPO") and Inter-affiliates Oversight ("IAO") framework assist the LOBs and Corporate in selecting, documenting, onboarding, monitoring and managing their supplier relationships including services provided by affiliates. The objectives of the TPO framework are to hold suppliers to a high level of operational performance and to mitigate key risks including data loss and business disruption. The Corporate Third-Party Oversight group is responsible for Firmwide training, monitoring, reporting and standards.

Insurance
One of the ways in which operational risk may be mitigated is through insurance maintained by the Firm. The Firm purchases insurance from commercial insurers and maintains a wholly-owned captive insurer, Park Assurance Company. Insurance may also be required by third parties with whom the Firm does business.

COMPLIANCE RISK MANAGEMENT

Compliance risk, a subcategory of operational risk, is the risk of failing to comply with laws, rules, regulations or codes of conduct and standards of self-regulatory organizations.

Overview

Each LOB and Corporate hold primary ownership of and accountability for managing compliance risk. The Firm's Operational Risk and Compliance Organization ("Operational Risk and Compliance"), which is independent of the LOBs and Corporate, provides independent review, monitoring and oversight of business operations with a focus on compliance with the laws, rules, and regulations applicable to the delivery of the Firm's products and services to clients and customers.

These compliance risks relate to a wide variety of laws, rules and regulations depending on the LOB and the jurisdiction, and include risks related to financial products and services, relationships and interactions with clients and customers, and employee activities. For example, compliance risks include those associated with anti-money laundering compliance, trading activities, market conduct, and complying with the laws, rules, and regulations related to the offering of products and services across jurisdictional borders. Compliance risk is also inherent in the Firm's fiduciary activities, including the failure to exercise the applicable standard of care (such as the duties of loyalty or care), to act in the best interest of clients and customers or to treat clients and customers fairly.

Other functions provide oversight of significant regulatory obligations that are specific to their respective areas of responsibility.

Operational Risk and Compliance implements policies and standards designed to govern, identify, measure, monitor and test, manage, and report on compliance risk.

Governance and oversight

Operational Risk and Compliance is led by the Firm's Global CCO and FRE for Operational Risk.

The Firm maintains oversight and coordination of its compliance risk through the implementation of the CCOR Risk Management Framework. The Firm's CCO also provides regular updates to the Audit Committee and the Board Risk Committee. In certain Special Purpose Committees of the Board have previously been established to oversee the Firm's compliance with regulatory Consent Orders.

Code of Conduct

The Firm has a Code of Conduct (the "Code") that sets forth the Firm's expectation that employees will conduct themselves with integrity at all times and provides the principles that govern employee conduct with clients, customers, shareholders and one another, as well as with the markets and communities in which the Firm does business. The Code requires employees to promptly report any potential or actual violation of the Code, any internal Firm policy, or any law or regulation applicable to the Firm's business. It also requires employees to report any illegal conduct, or conduct that violates the underlying principles of the Code, by any of the Firm's employees, clients, customers, suppliers, contract workers, business partners, or agents. All newly hired employees are assigned Code training and current employees are periodically assigned Code training on an ongoing basis. Employees are required to affirm their compliance with the Code periodically.

Employees can report any potential or actual violations of the Code through the JPMC Conduct Hotline by phone or the internet. The Hotline is anonymous, except in certain non-U.S. jurisdictions where laws prohibit anonymous reporting, and is available at all times globally, with translation services. It is administered by an outside service provider. The Code prohibits retaliation against anyone who raises an issue or concern in good faith. Periodically, the Audit Committee receives reports on the Code of Conduct program.

Conduct risk, a subcategory of operational risk, is the risk that any action or inaction by an employee or employees could lead to unfair client or customer outcomes, impact the integrity of the markets in which the Firm operates, or compromise the Firm's reputation.

Overview

Each LOB and Corporate is accountable for identifying and managing its conduct risk to provide appropriate engagement, ownership and sustainability of a culture consistent with the Firm's How We Do Business Principles (the "Principles"). The Principles serve as a guide for how employees are expected to conduct themselves. With the Principles serving as a guide, the Firm's Code sets out the Firm's expectations for each employee and provides information and resources to help employees conduct business ethically and in compliance with the laws everywhere the Firm operates. Refer to Compliance Risk Management on page 148 for further discussion of the Code.

Governance and oversight

The Conduct Risk Program is governed by the CCOR Management policy, which establishes the framework for governance, identification, measurement, monitoring and testing, management and reporting conduct risk in the Firm.

The Firm has a senior committee that provides oversight of the Firm's conduct initiatives to develop a more holistic view of conduct risks and to connect key programs across the Firm in order to identify opportunities and emerging areas of focus. This committee is responsible for setting overall program direction for strategic enhancements to the Firm's employee conduct framework and review the consolidated Firmwide Conduct Risk Appetite Assessment.

Conduct risk management encompasses various aspects of people management practices throughout the employee life cycle, including recruiting, onboarding, training and development, performance management, promotion and compensation processes. Each LOB, Treasury and CIO, and designated corporate functions completes an assessment of conduct risk periodically, reviews metrics and issues which may involve conduct risk, and provides business conduct training as appropriate.

LEGAL RISK MANAGEMENT

Legal risk, a subcategory of operational risk, is the risk of loss primarily caused by the actual or alleged failure to meet legal obligations that arise from the rule of law in jurisdictions in which the Firm operates, agreements with clients and customers, and products and services offered by the Firm.

Overview

The global Legal function ("Legal") provides legal services and advice to the Firm. Legal is responsible for managing the Firm's exposure to legal risk by:

- managing actual and potential litigation and enforcement matters, including internal reviews and investigations related to such matters
- advising on products and services, including contract negotiation and documentation
- advising on offering and marketing documents and new business initiatives
- managing dispute resolution
- interpreting existing laws, rules and regulations, and advising on changes to them
- advising on advocacy in connection with contemplated and proposed laws, rules and regulations, and
- providing legal advice to the LOBs, Corporate, functions and the Board.

Legal selects, engages and manages outside counsel for the Firm on all matters in which outside counsel is engaged. In addition, Legal advises the Firm's Conflicts Office which reviews the Firm's wholesale transactions that may have the potential to create conflicts of interest for the Firm.

Governance and oversight

The Firm's General Counsel reports to the CEO and is a member of the Operating Committee, the Firmwide Risk Committee and the Firmwide Control Committee. The Firm's General Counsel and other members of Legal report on significant legal matters to the Firm's Board of Directors and to the Audit Committee.

Legal serves on and advises various committees and advises the Firm's LOBs and Corporate on potential reputation risk issues.

ESTIMATIONS AND MODEL RISK MANAGEMENT

Estimations and Model risk, a subcategory of operational risk, is the potential for adverse consequences from decisions based on incorrect or misused estimation outputs.

The Firm uses models and other analytical and judgment-based estimations across various businesses and functions. The estimation methods are of varying levels of sophistication and are used for many purposes, such as the valuation of positions and measurement of risk, assessing regulatory capital requirements, conducting stress testing, and making business decisions. A dedicated independent function, Model Risk Governance and Review ("MRGR"), defines and governs the Firm's policies relating to the management of model risk and risks associated with certain analytical and judgment-based estimations, such as those used in risk management, budget forecasting and capital planning and analysis.

The governance of analytical and judgment-based estimations within MRGR's scope follows a consistent approach to the approach used for models, which is described in detail below.

Model risks are owned by the users of the models within the Firm based on the specific purposes of such models. Users and developers of models are responsible for developing, implementing and testing their models, as well as referring models to the MRGR for review and approval. Once models have been approved, model users and developers are responsible for maintaining a robust operating environment, and must monitor and evaluate the performance of the models on an ongoing basis. Model users and developers may seek to enhance models in response to changes in the portfolios and in product and market developments, as well as to capture improvements in available modeling techniques and systems capabilities.

Models are tiered based on an internal standard according to their complexity, the exposure associated with the model and the Firm's reliance on the model. This tiering is subject to the approval of the MRGR. In its review of a model, the MRGR considers whether the model is suitable for the specific purposes for which it will be used. When reviewing a model, the MRGR analyzes and challenges the model methodology and the reasonableness of model assumptions, and may perform or require additional testing, including back-testing of model outcomes. Model reviews are approved by the appropriate level of management within the MRGR based on the relevant model tier.

Under the Firm's Estimations and Model Risk Management Policy, the MRGR reviews and approves new models, as well as material changes to existing models, prior to implementation in the operating environment. In certain circumstances exceptions may be granted to the Firm's policy to allow a model to be used prior to review or approval. The MRGR may also require the user to take appropriate actions to mitigate the model risk if it is to be used in the interim. These actions will depend on the model and may include, for example, limitation of trading activity.

While models are inherently imprecise, the degree of imprecision or uncertainty can be heightened by the market or economic environment. This is particularly true when the current and forecasted environment is significantly different from the historical macroeconomic environments upon which the models were trained, as the Firm has experienced during the COVID-19 pandemic. This uncertainty may necessitate a greater degree of judgment and analytics to inform adjustments to model outputs than in typical periods.

Refer to Critical Accounting Estimates Used by the Firm on pages 152-155 and Note 2 for a summary of model-based valuations and other valuation techniques.

CRITICAL ACCOUNTING ESTIMATES USED BY THE FIRM

JPMorgan Chase's accounting policies and use of estimates are integral to understanding its reported results. The Firm's most complex accounting estimates require management's judgment to ascertain the appropriate carrying value of assets and liabilities. The Firm has established policies and control procedures intended to ensure that estimation methods, including any judgments made as part of such methods, are well-controlled, independently reviewed and applied consistently from period to period. The methods used and judgments made reflect, among other factors, the nature of the assets or liabilities and the related business and risk management strategies, which may vary across the Firm's businesses and portfolios. In addition, the policies and procedures are intended to ensure that the process for changing methodologies occurs in an appropriate manner. The Firm believes its estimates for determining the carrying value of its assets and liabilities are appropriate. The following is a brief description of the Firm's critical accounting estimates involving significant judgments.

Allowance for credit losses

The Firm's allowance for credit losses represents management's estimate of expected credit losses over the remaining expected life of the Firm's financial assets measured at amortized cost and certain off-balance sheet lending-related commitments. The allowance for credit losses comprises:

- The allowance for loan losses, which covers the Firm's retained loan portfolios (scored and risk-rated),
- The allowance for lending-related commitments, and
- The allowance for credit losses on investment securities, which covers the Firm's HTM and AFS securities.

The allowance for credit losses involves significant judgment on a number of matters including development and weighting of macroeconomic forecasts, incorporation of historical loss experience, assessment of risk characteristics, assignment of risk ratings, valuation of collateral, and the determination of remaining expected life. Refer to Note 10 and Note 13 for further information on these judgments as well as the Firm's policies and methodologies used to determine the Firm's allowance for credit losses.

One of the most significant judgments involved in estimating the Firm's allowance for credit losses relates to the macroeconomic forecasts used to estimate credit losses over the eight-quarter forecast period within the Firm's methodology. The eight-quarter forecast incorporates hundreds of macroeconomic variables ("MEVs") that are relevant for exposures across the Firm, with modeled credit losses being driven primarily by a subset of less than twenty variables. The specific variables that have the greatest effect on the modeled losses of each portfolio vary by portfolio and geography.

- Key MEVs for the consumer portfolio include U.S. unemployment, house price index ("HPI") and U.S. real gross domestic product ("GDP").
- Key MEVs for the wholesale portfolio include U.S. real GDP, U.S. unemployment, U.S. equity prices, corporate credit spreads, oil prices, commercial real estate prices and HPI.

Changes in the Firm's assumptions and forecasts of economic conditions could significantly affect its estimate of expected credit losses in the portfolio at the balance sheet date or lead to significant changes in the estimate from one reporting period to the next.

The COVID-19 pandemic has resulted in a weak labor market and weak overall economic conditions that will continue to affect borrowers across the Firm's consumer and wholesale lending portfolios. Significant judgment is required to estimate the severity and duration of the current economic downturn, as well as its potential impact on borrower defaults and loss severities. In particular, macroeconomic conditions and forecasts regarding the duration and severity of the economic downturn caused by the COVID-19 pandemic have been rapidly changing and remain highly uncertain. It is difficult to predict exactly how borrower behavior will be impacted by these changes in economic conditions. The effectiveness of government support, customer assistance and enhanced unemployment benefits should act as mitigants to credit losses, but the extent of the mitigation impact remains uncertain.

It is difficult to estimate how potential changes in any one factor or input might affect the overall allowance for credit losses because management considers a wide variety of factors and inputs in estimating the allowance for credit losses. Changes in the factors and inputs considered may not occur at the same rate and may not be consistent across all geographies or product types, and changes in factors and inputs may be directionally inconsistent, such that improvement in one factor or input may offset deterioration in others.

To consider the impact of a hypothetical alternate macroeconomic forecast, the Firm compared the modeled credit losses determined using its central and relative adverse macroeconomic scenarios, which are two of the five scenarios considered in estimating the allowances for loan losses and lending-related commitments. The central and relative adverse scenarios each included a full suite of MEVs, but differed in the levels, paths and peaks/troughs of those variables over the eight-quarter forecast period.

For example, compared to the Firm's central scenario described on page 132 and in Note 13, the Firm's relative adverse scenario assumes a significantly elevated U.S. unemployment rate throughout 2021, averaging 3.0% higher over the eight-quarter forecast, with a peak difference of approximately 4.0% in the second quarter of 2021; lower U.S. real GDP with a slower recovery, remaining nearly 2.6% lower at the end of the eight-quarter forecast, with a peak difference of nearly 4.1% in the third quarter of 2021; and a 10.1% further deterioration in the national HPI with a trough in the first quarter of 2022.

This analysis is not intended to estimate expected future changes in the allowance for credit losses, for a number of reasons, including:

- the Firm has placed significant weight on its adverse scenarios in estimating its allowance for credit losses as of December 31, 2020, and accordingly, the existing allowance already reflects credit losses beyond those estimated under the central scenario
- the impacts of changes in many MEVs are both interrelated and nonlinear, so the results of this analysis cannot be simply extrapolated for more severe changes in macroeconomic variables
- the COVID-19 pandemic has stressed many MEVs at a speed and to degrees not seen in recent history, adding significantly higher degrees of uncertainty around modeled credit loss estimations
- significant changes in the expected severity and duration of the economic downturn caused by the COVID-19 pandemic, the effects of government support and customer assistance, and the speed of the subsequent recovery could significantly affect the Firm's estimate of expected credit losses irrespective of the estimated sensitivities described below.

Without considering the additional weight the Firm has placed on its adverse scenarios or any other offsetting or correlated effects in other qualitative components of the Firm's allowance for credit losses for the lending exposures noted below, the difference between the modeled estimates under the Firm's relative adverse and central scenarios at December 31, 2020 would result in the following:

- An increase of approximately $700 million for residential real estate loans and lending-related commitments
- An increase of approximately $5.1 billion for credit card loans
- An increase of approximately $2.8 billion for wholesale loans and lending-related commitments

This analysis relates only to the modeled credit loss estimates and is not intended to estimate changes in the overall allowance for credit losses as it does not reflect any potential changes in other adjustments to the quantitative calculation, which would also be influenced by the judgment management applies to the modeled lifetime loss estimates to reflect the uncertainty and imprecision of these modeled lifetime loss estimates based on then-current circumstances and conditions.

Recognizing that forecasts of macroeconomic conditions are inherently uncertain, particularly in light of the recent economic conditions, the Firm believes that its process to consider the available information and associated risks and uncertainties is appropriately governed and that its estimates of expected credit losses were reasonable and appropriate for the period ended December 31, 2020.

Fair value

JPMorgan Chase carries a portion of its assets and liabilities at fair value. The majority of such assets and liabilities are measured at fair value on a recurring basis, including, derivatives and structured note products. Certain assets and liabilities are measured at fair value on a nonrecurring basis, including certain mortgage, home equity and other loans, where the carrying value is based on the fair value of the underlying collateral.

Assets measured at fair value

The following table includes the Firm's assets measured at fair value and the portion of such assets that are classified within level 3 of the valuation hierarchy. Refer to Note 2 for further information.

December 31, 2020 (in billions, except ratios)	Total assets at fair value	Total level 3 assets
Federal Funds sold and securities purchased under resale agreements	$ 238.0	$ –
Securities borrowed	53.0	–
Trading assets:		
Trading debt and equity instruments	$ 423.5	$ 2.6
Derivative receivables[(a)]	79.6	7.7
Total trading assets	503.1	10.3
AFS securities	388.2	–
Loans	44.5	2.3
MSRs	3.3	3.3
Other	304.1	0.5
Total assets measured at fair value on a recurring basis	1,243.2	16.4
Total assets measured at fair value on a nonrecurring basis	3.6	2.0
Total assets measured at fair value	$ 1,246.8	$ 18.4
Total Firm assets	$ 3,386.1	
Level 3 assets at fair value as a percentage of total Firm assets[(a)]		0.5%
Level 3 assets at fair value as a percentage of total Firm assets at fair value[(a)]		1.5%

(a) For purposes of the table above, the derivative receivables total reflects the impact of netting adjustments; however, the $7.7 billion of derivative receivables classified as level 3 does not reflect the netting adjustment as such netting is not relevant to a presentation based on the transparency of inputs to the valuation of an asset. The level 3 balances would be reduced if netting were applied, including the netting benefit associated with cash collateral.

Valuation

Details of the Firm's processes for determining fair value are set out in Note 2. Estimating fair value requires the application of judgment. The type and level of judgment required is largely dependent on the amount of observable market information available to the Firm. For instruments valued using internally developed valuation models and other valuation techniques that use significant unobservable inputs and are therefore classified within level 3 of the valuation hierarchy, judgments used to estimate fair value are more significant than those required when estimating the fair value of instruments classified within levels 1 and 2.

In arriving at an estimate of fair value for an instrument within level 3, management must first determine the appropriate valuation model or other valuation technique to use. Second, the lack of observability of certain significant inputs requires management to assess all relevant empirical data in deriving valuation inputs including, for example, transaction details, yield curves, interest rates, prepayment speed, default rates, volatilities, correlations, prices (such as commodity, equity or debt prices), valuations of comparable instruments, foreign exchange rates and credit curves. Refer to Note 2 for a further discussion of the valuation of level 3 instruments, including unobservable inputs used.

For instruments classified in levels 2 and 3, management judgment must be applied to assess the appropriate level of valuation adjustments to reflect counterparty credit quality, the Firm's creditworthiness, market funding rates, liquidity considerations, unobservable parameters, and for portfolios that meet specified criteria, the size of the net open risk position. The judgments made are typically affected by the type of product and its specific contractual terms, and the level of liquidity for the product or within the market as a whole. In periods of heightened market volatility and uncertainty judgments are further affected by the wider variation of reasonable valuation estimates, particularly for positions that are less liquid. Refer to Note 2 for a further discussion of valuation adjustments applied by the Firm.

Imprecision in estimating unobservable market inputs or other factors can affect the amount of gain or loss recorded for a particular position. Furthermore, while the Firm believes its valuation methods are appropriate and consistent with those of other market participants, the methods and assumptions used reflect management judgment and may vary across the Firm's businesses and portfolios.

The Firm uses various methodologies and assumptions in the determination of fair value. The use of methodologies or assumptions different than those used by the Firm could result in a different estimate of fair value at the reporting date. Refer to Note 2 for a detailed discussion of the Firm's valuation process and hierarchy, and its determination of fair value for individual financial instruments.

Goodwill impairment

Under U.S. GAAP, goodwill must be allocated to reporting units and tested for impairment at least annually. The Firm's process and methodology used to conduct goodwill impairment testing is described in Note 15.

Management applies significant judgment when testing goodwill for impairment. The goodwill associated with each business combination is allocated to the related reporting units for goodwill impairment testing.

For the year ended December 31, 2020, the Firm reviewed current economic conditions, including the potential impacts of the COVID-19 pandemic on business performance, estimated market cost of equity, as well as actual business results and projections of business performance for all its reporting units. The Firm has concluded that the goodwill allocated to its reporting units was not impaired as of December 31, 2020. The fair values of these reporting units exceeded their carrying values by at least 15% and did not indicate a significant risk of goodwill impairment based on current projections and valuations.

The projections for all of the Firm's reporting units are consistent with management's current business outlook assumptions in the short term, and the Firm's best estimates of long-term growth and return on equity in the longer term. Where possible, the Firm uses third-party and peer data to benchmark its assumptions and estimates.

Refer to Note 15 for additional information on goodwill, including the goodwill impairment assessment as of December 31, 2020.

Credit card rewards liability

JPMorgan Chase offers credit cards with various rewards programs which allow cardholders to earn rewards points based on their account activity and the terms and conditions of the rewards program. Generally, there are no limits on the points that an eligible cardholder can earn, nor do the points expire, and the points can be redeemed for a variety of rewards, including cash (predominantly in the form of account credits), gift cards and travel. The Firm maintains a rewards liability which represents the estimated cost of rewards points earned and expected to be redeemed by cardholders. The liability is accrued as the cardholder earns the benefit and is reduced when the cardholder redeems points. This liability was $7.7 billion and $6.4 billion at December 31, 2020 and 2019, respectively, and is recorded in accounts payable and other liabilities on the Consolidated balance sheets.

The rewards liability is sensitive to redemption rate ("RR") and cost per point ("CPP") assumptions. The RR assumption is used to estimate the number of points earned by customers that will be redeemed over the life of the account. The CPP assumption is used to estimate the cost of future point redemptions. These assumptions are evaluated periodically considering historical actuals and cardholder redemption behavior and updates to them will impact the rewards liability. As of December 31, 2020, a combined increase of 25 basis points in RR and 1 basis point in CPP would increase the rewards liability by approximately $215 million.

Income taxes

JPMorgan Chase is subject to the income tax laws of the various jurisdictions in which it operates, including U.S. federal, state and local, and non-U.S. jurisdictions. These laws are often complex and may be subject to different interpretations. To determine the financial statement impact of accounting for income taxes, including the provision for income tax expense and unrecognized tax benefits, JPMorgan Chase must make assumptions and judgments about how to interpret and apply these complex tax laws to numerous transactions and business events, as well as make judgments regarding the timing of when certain items may affect taxable income in the U.S. and non-U.S. tax jurisdictions.

JPMorgan Chase's interpretations of tax laws around the world are subject to review and examination by the various taxing authorities in the jurisdictions where the Firm operates, and disputes may occur regarding its view on a tax position. These disputes over interpretations with the various taxing authorities may be settled by audit, administrative appeals or adjudication in the court systems of the tax jurisdictions in which the Firm operates. JPMorgan Chase regularly reviews whether it may be assessed additional income taxes as a result of the resolution of these matters, and the Firm records additional reserves as appropriate. In addition, the Firm may revise its estimate of income taxes due to changes in income tax laws, legal interpretations, and business strategies. It is possible that revisions in the Firm's estimate of income taxes may materially affect the Firm's results of operations in any reporting period.

The Firm's provision for income taxes is composed of current and deferred taxes. Deferred taxes arise from differences between assets and liabilities measured for financial reporting versus income tax return purposes. Deferred tax assets are recognized if, in management's judgment, their realizability is determined to be more likely than not. The Firm has also recognized deferred tax assets in connection with certain tax attributes, including net operating loss ("NOL") carryforwards and foreign tax credit ("FTC") carryforwards. The Firm performs regular reviews to ascertain whether its deferred tax assets are realizable. These reviews include management's estimates and assumptions regarding future taxable income, which also incorporates various tax planning strategies, including strategies that may be available to utilize NOLs before they expire. In connection with these reviews, if it is determined that a deferred tax asset is not realizable, a valuation allowance is established. The valuation allowance may be reversed in a subsequent reporting period if the Firm determines that, based on revised estimates of future taxable income or changes in tax planning strategies, it is more likely than not that all or part of the deferred tax asset will become realizable. As of December 31, 2020, management has determined it is more likely than not that the Firm will realize its deferred tax assets, net of the existing valuation allowance.

The Firm adjusts its unrecognized tax benefits as necessary when additional information becomes available. Uncertain tax positions that meet the more-likely-than-not recognition threshold are measured to determine the amount of benefit to recognize. An uncertain tax position is measured at the largest amount of benefit that management believes is more likely than not to be realized upon settlement. It is possible that the reassessment of JPMorgan Chase's unrecognized tax benefits may have a material impact on its effective income tax rate in the period in which the reassessment occurs.

Refer to Note 25 for additional information on income taxes.

Litigation reserves

Refer to Note 30 for a description of the significant estimates and judgments associated with establishing litigation reserves.

ACCOUNTING AND REPORTING DEVELOPMENTS

Financial Accounting Standards Board ("FASB") Standards Adopted since January 1, 2020

Standard	Summary of guidance	Effects on financial statements
Financial Instruments - Credit Losses ("CECL") *Issued June 2016*	• Establishes a single allowance framework for all financial assets measured at amortized cost and certain off-balance sheet credit exposures. This framework requires that management's estimate reflects credit losses over the instrument's remaining expected life and considers expected future changes in macroeconomic conditions. • Eliminates existing guidance for PCI loans, and requires recognition of the nonaccretable difference as an increase to the allowance for expected credit losses on financial assets purchased with more than insignificant credit deterioration since origination, with a corresponding increase in the amortized cost of the related loans. • Requires inclusion of expected recoveries, limited to the cumulative amount of prior writeoffs, when estimating the allowance for credit losses for in scope financial assets (including collateral-dependent assets). • Amends existing impairment guidance for AFS securities to incorporate an allowance, which will allow for reversals of credit impairments in the event that the credit of an issuer improves. • Requires a cumulative-effect adjustment to retained earnings as of the beginning of the reporting period of adoption.	• Adopted January 1, 2020. • Refer to Note 1 for further information.
Goodwill *Issued January 2017*	• Requires recognition of an impairment loss when the estimated fair value of a reporting unit falls below its carrying value. • Eliminates the requirement that an impairment loss be recognized only if the estimated implied fair value of the goodwill is below its carrying value.	• Adopted January 1, 2020. • No impact upon adoption as the guidance was applied prospectively. • Refer to Note 15 for further information.
Reference Rate Reform *Issued March 2020 and updated January 2021*	• Provides optional expedients and exceptions to current accounting guidance when financial instruments, hedge accounting relationships, and other transactions are amended due to reference rate reform. • Provides an election to account for certain contract amendments related to reference rate reform as modifications rather than extinguishments without the requirement to assess the significance of the amendments. • Allows for changes in critical terms of a hedge accounting relationship without automatic termination of that relationship. Provides various practical expedients and elections designed to allow hedge accounting to continue uninterrupted during the transition period. • Provides a one-time election to transfer securities out of the held-to-maturity classification if certain criteria are met. • The January 2021 update provides an election to account for derivatives modified to change the rate used for discounting, margining, or contract price alignment (collectively "discounting transition") as modifications.	• Issued and effective March 12, 2020. The January 7, 2021 update was effective when issued. • The Firm elected to apply certain of the practical expedients related to contract modifications and hedge accounting relationships, and discounting transition beginning in the third quarter of 2020. The discounting transition election was applied retrospectively. The main purpose of the practical expedients is to ease the administrative burden of accounting for contracts impacted by reference rate reform, and these elections did not have a material impact on the Consolidated Financial Statements.

FORWARD-LOOKING STATEMENTS

From time to time, the Firm has made and will make forward-looking statements. These statements can be identified by the fact that they do not relate strictly to historical or current facts. Forward-looking statements often use words such as "anticipate," "target," "expect," "estimate," "intend," "plan," "goal," "believe," or other words of similar meaning. Forward-looking statements provide JPMorgan Chase's current expectations or forecasts of future events, circumstances, results or aspirations. JPMorgan Chase's disclosures in this 2020 Form 10-K contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. The Firm also may make forward-looking statements in its other documents filed or furnished with the SEC. In addition, the Firm's senior management may make forward-looking statements orally to investors, analysts, representatives of the media and others.

All forward-looking statements are, by their nature, subject to risks and uncertainties, many of which are beyond the Firm's control. JPMorgan Chase's actual future results may differ materially from those set forth in its forward-looking statements. While there is no assurance that any list of risks and uncertainties or risk factors is complete, below are certain factors which could cause actual results to differ from those in the forward-looking statements:

- Economic, financial, reputational and other impacts of the COVID-19 pandemic;
- Local, regional and global business, economic and political conditions and geopolitical events;
- Changes in laws and regulatory requirements, including capital and liquidity requirements affecting the Firm's businesses, and the ability of the Firm to address those requirements;
- Heightened regulatory and governmental oversight and scrutiny of JPMorgan Chase's business practices, including dealings with retail customers;
- Changes in trade, monetary and fiscal policies and laws;
- Changes in income tax laws and regulations;
- Securities and capital markets behavior, including changes in market liquidity and volatility;
- Changes in investor sentiment or consumer spending or savings behavior;
- Ability of the Firm to manage effectively its capital and liquidity;
- Changes in credit ratings assigned to the Firm or its subsidiaries;
- Damage to the Firm's reputation;
- Ability of the Firm to appropriately address social, environmental and sustainability concerns that may arise, including from its business activities;
- Ability of the Firm to deal effectively with an economic slowdown or other economic or market disruption, including, but not limited to, in the interest rate environment;
- Technology changes instituted by the Firm, its counterparties or competitors;
- The effectiveness of the Firm's control agenda;
- Ability of the Firm to develop or discontinue products and services, and the extent to which products or services previously sold by the Firm require the Firm to incur liabilities or absorb losses not contemplated at their initiation or origination;
- Acceptance of the Firm's new and existing products and services by the marketplace and the ability of the Firm to innovate and to increase market share;
- Ability of the Firm to attract and retain qualified and diverse employees;
- Ability of the Firm to control expenses;
- Competitive pressures;
- Changes in the credit quality of the Firm's clients, customers and counterparties;
- Adequacy of the Firm's risk management framework, disclosure controls and procedures and internal control over financial reporting;
- Adverse judicial or regulatory proceedings;
- Changes in applicable accounting policies, including the introduction of new accounting standards;
- Ability of the Firm to determine accurate values of certain assets and liabilities;
- Occurrence of natural or man-made disasters or calamities, including health emergencies, the spread of infectious diseases, pandemics or outbreaks of hostilities, or the effects of climate change, and the Firm's ability to deal effectively with disruptions caused by the foregoing;
- Ability of the Firm to maintain the security of its financial, accounting, technology, data processing and other operational systems and facilities;
- Ability of the Firm to withstand disruptions that may be caused by any failure of its operational systems or those of third parties;
- Ability of the Firm to effectively defend itself against cyber attacks and other attempts by unauthorized parties to access information of the Firm or its customers or to disrupt the Firm's systems; and
- The other risks and uncertainties detailed in Part I, Item 1A: Risk Factors in JPMorgan Chase's 2020 Form 10-K.

Any forward-looking statements made by or on behalf of the Firm speak only as of the date they are made, and JPMorgan Chase does not undertake to update any forward-looking statements. The reader should, however, consult any further disclosures of a forward-looking nature the Firm may make in any subsequent Form 10-Ks, Quarterly Reports on Form 10-Qs, or Current Reports on Form 8-K.

Management's report on internal control over financial reporting

Management of JPMorgan Chase & Co. ("JPMorgan Chase" or the "Firm") is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed by, or under the supervision of, the Firm's principal executive and principal financial officers, or persons performing similar functions, and effected by JPMorgan Chase's Board of Directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP").

JPMorgan Chase's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records, that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the Firm's assets; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. GAAP, and that receipts and expenditures of the Firm are being made only in accordance with authorizations of JPMorgan Chase's management and directors; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Firm's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. Management has completed an assessment of the effectiveness of the Firm's internal control over financial reporting as of December 31, 2020. In making the assessment, management used the "Internal Control — Integrated Framework" ("COSO 2013") promulgated by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO").

Based upon the assessment performed, management concluded that as of December 31, 2020, JPMorgan Chase's internal control over financial reporting was effective based upon the COSO 2013 framework. Additionally, based upon management's assessment, the Firm determined that there were no material weaknesses in its internal control over financial reporting as of December 31, 2020.

The effectiveness of the Firm's internal control over financial reporting as of December 31, 2020, has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

James Dimon
Chairman and Chief Executive Officer

Jennifer Piepszak
Executive Vice President and Chief Financial Officer

February 23, 2021

To the Board of Directors and Shareholders of JPMorgan Chase & Co.:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of JPMorgan Chase & Co. and its subsidiaries (the "Firm") as of December 31, 2020 and 2019, and the related consolidated statements of income, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2020, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Firm's internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Firm as of December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Firm maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control – Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 and Note 13 to the consolidated financial statements, the Firm changed the manner in which it accounts for credit losses on certain financial instruments in 2020.

Basis for Opinions

The Firm's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's report on internal control over financial reporting. Our responsibility is to express opinions on the Firm's consolidated financial statements and on the Firm's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Firm in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

PricewaterhouseCoopers LLP • 300 Madison Avenue • New York, NY 10017

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Allowance for Loan Losses – Portfolio-based component of Wholesale Loan and Credit Card Loan Portfolios

As described in Note 13 to the consolidated financial statements, the allowance for loan losses for the portfolio-based component of the wholesale and credit card loan portfolios was $23.4 billion on total portfolio-based retained loans of $653.4 billion at December 31, 2020. The Firm's allowance for loan losses represents management's estimate of expected credit losses over the remaining expected life of the Firm's loan portfolios and considers expected future changes in macroeconomic conditions. The portfolio-based component of the Firm's allowance for loan losses for the wholesale and credit card retained loan portfolios begins with a quantitative calculation of expected credit losses over the expected life of the loan by applying credit loss factors to the estimated exposure at default. The credit loss factors applied are determined based on the weighted average of five internally developed macroeconomic scenarios that take into consideration the Firm's economic outlook as derived through forecast macroeconomic variables, the most significant of which are U.S. unemployment and U.S. real gross domestic product. This quantitative calculation is further adjusted to take into consideration model imprecision, emerging risk assessments, trends and other subjective factors that are not yet otherwise reflected in the credit loss estimate.

The principal considerations for our determination that performing procedures relating to the allowance for loan losses for the portfolio-based component of the wholesale and credit card loan portfolios is a critical audit matter are (i) the significant judgment and estimation by management in the forecast of macroeconomic variables, specifically U.S. unemployment and U.S. real gross domestic product, as the Firm's forecasts of economic conditions significantly affect its estimate of expected credit losses at the balance sheet date, (ii) the significant judgment and estimation by management in determining the quantitative calculation utilized in their credit loss estimates and the adjustments to take into consideration model imprecision, emerging risk assessments, trends and other subjective factors that are not yet otherwise reflected in the credit loss estimate, which both in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures and in evaluating audit evidence obtained relating to the credit loss estimates and the appropriateness of the adjustments to the credit loss estimates, and (iii) the audit effort involved professionals with specialized skill and knowledge to assist in evaluating the audit evidence.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the Firm's allowance for loan losses, including controls over model validation and generation of macroeconomic scenarios. These procedures also included, among others, testing management's process for estimating the allowance for loan losses, which involved (i) evaluating the appropriateness of the models and methodologies used in quantitative calculations; (ii) evaluating the reasonableness of forecasts of U.S. unemployment and U.S. real gross domestic product; (iii) testing the completeness and accuracy of data used in the estimate; and (iv) evaluating the reasonableness of management's adjustments to the quantitative output for the impacts of model imprecision, emerging risk assessments, trends and other subjective factors that are not yet otherwise reflected in the credit loss estimate. These procedures also included the use of professionals with specialized skill and knowledge to assist in evaluating the appropriateness of certain models, methodologies and macroeconomic variables.

Fair Value of Certain Level 3 Financial Instruments

As described in Notes 2 and 3 to the consolidated financial statements, the Firm carries $1.2 trillion of its assets and $437.6 billion of its liabilities at fair value on a recurring basis. Included in these balances are $10.3 billion of trading assets and $41.5 billion of liabilities measured at fair value on a recurring basis, collectively financial instruments, which are classified as level 3 as they contain one or more inputs to valuation which are unobservable and significant to their fair value measurement. The Firm utilized internally developed valuation models and unobservable inputs to estimate fair value of the level 3 financial instruments. The unobservable inputs used by management to estimate the fair value of certain of these financial instruments include forward equity prices, volatility relating to interest rates and equity prices and correlation relating to interest rates, equity prices, credit and foreign exchange rates.

The principal considerations for our determination that performing procedures relating to the fair value of certain level 3 financial instruments is a critical audit matter are (i) the significant judgment and estimation by management in determining the inputs to estimate fair value, which in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures related to the fair value of these financial instruments, and (ii) the audit effort involved professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained from these procedures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the Firm's processes for determining fair value which include controls over models, inputs, and data. These procedures also included, among others, the involvement of professionals with specialized skill and knowledge to assist in developing an independent estimate of fair value for a sample of these financial instruments. Developing the independent estimate involved testing the completeness and accuracy of data provided by management, developing independent inputs and, as appropriate, evaluating and utilizing management's aforementioned unobservable inputs; and comparing management's estimate to the independently developed estimate of fair value.

PricewaterhouseCoopers LLP

February 23, 2021

We have served as the Firm's auditor since 1965.

Consolidated statements of income

Year ended December 31, (in millions, except per share data)	2020	2019	2018
Revenue			
Investment banking fees	$ **9,486**	$ 7,501	$ 7,550
Principal transactions	**18,021**	14,018	12,059
Lending- and deposit-related fees[(a)]	**6,511**	6,626	6,377
Asset management, administration and commissions[(a)]	**18,177**	16,908	16,793
Investment securities gains/(losses)	**802**	258	(395)
Mortgage fees and related income	**3,091**	2,036	1,254
Card income[(b)]	**4,435**	5,076	4,743
Other income	**4,457**	5,731	5,343
Noninterest revenue	**64,980**	58,154	53,724
Interest income	**64,523**	84,040	76,100
Interest expense	**9,960**	26,795	21,041
Net interest income	**54,563**	57,245	55,059
Total net revenue	**119,543**	115,399	108,783
Provision for credit losses	**17,480**	5,585	4,871
Noninterest expense			
Compensation expense	**34,988**	34,155	33,117
Occupancy expense	**4,449**	4,322	3,952
Technology, communications and equipment expense	**10,338**	9,821	8,802
Professional and outside services	**8,464**	8,533	8,502
Marketing[(b)]	**2,476**	3,351	3,044
Other expense	**5,941**	5,087	5,731
Total noninterest expense	**66,656**	65,269	63,148
Income before income tax expense	**35,407**	44,545	40,764
Income tax expense	**6,276**	8,114	8,290
Net income	$ **29,131**	$ 36,431	$ 32,474
Net income applicable to common stockholders	$ **27,410**	$ 34,642	$ 30,709
Net income per common share data			
Basic earnings per share	$ **8.89**	$ 10.75	$ 9.04
Diluted earnings per share	**8.88**	10.72	9.00
Weighted-average basic shares	**3,082.4**	3,221.5	3,396.4
Weighted-average diluted shares	**3,087.4**	3,230.4	3,414.0

(a) In the first quarter of 2020, the Firm reclassified certain fees from asset management, administration and commissions to lending- and deposit-related fees. Prior-period amounts have been revised to conform with the current presentation.

(b) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.

The Notes to Consolidated Financial Statements are an integral part of these statements.

Consolidated statements of comprehensive income

Year ended December 31, (in millions)		**2020**		2019		2018
Net income	**$**	**29,131**	$	36,431	$	32,474
Other comprehensive income/(loss), after–tax						
Unrealized gains/(losses) on investment securities		**4,123**		2,855		(1,858)
Translation adjustments, net of hedges		**234**		20		20
Fair value hedges		**19**		30		(107)
Cash flow hedges		**2,320**		172		(201)
Defined benefit pension and OPEB plans		**212**		964		(373)
DVA on fair value option elected liabilities		**(491)**		(965)		1,043
Total other comprehensive income/(loss), after–tax		**6,417**		3,076		(1,476)
Comprehensive income	**$**	**35,548**	$	39,507	$	30,998

The Notes to Consolidated Financial Statements are an integral part of these statements.

Consolidated balance sheets

December 31, (in millions, except share data)	2020	2019
Assets		
Cash and due from banks	**$ 24,874**	$ 21,704
Deposits with banks	**502,735**	241,927
Federal funds sold and securities purchased under resale agreements (included **$238,015** and $14,561 at fair value)	**296,284**	249,157
Securities borrowed (included **$52,983** and $6,237 at fair value)	**160,635**	139,758
Trading assets (included assets pledged of **$130,645** and $111,522)[(a)]	**503,126**	369,687
Available-for-sale securities (amortized cost of **$381,729** and $345,306; included assets pledged of $32,227 and $10,325)	**388,178**	350,699
Held-to-maturity securities (net of allowance for credit losses of $78)	**201,821**	47,540
Investment securities, net of allowance for credit losses	**589,999**	398,239
Loans (included **$44,474** and $44,955 at fair value)[(a)]	**1,012,853**	997,620
Allowance for loan losses	**(28,328)**	(13,123)
Loans, net of allowance for loan losses	**984,525**	984,497
Accrued interest and accounts receivable	**90,503**	72,861
Premises and equipment	**27,109**	25,813
Goodwill, MSRs and other intangible assets	**53,428**	53,341
Other assets (included **$13,827** and $12,676 at fair value and assets pledged of **$3,739** and $3,349)[(a)]	**152,853**	130,395
Total assets[(b)]	**$ 3,386,071**	$ 2,687,379
Liabilities		
Deposits (included **$14,484** and $28,589 at fair value)	**$ 2,144,257**	$ 1,562,431
Federal funds purchased and securities loaned or sold under repurchase agreements (included **$155,735** and $549 at fair value)	**215,209**	183,675
Short-term borrowings (included **$16,893** and $5,920 at fair value)	**45,208**	40,920
Trading liabilities	**170,181**	119,277
Accounts payable and other liabilities (included **$3,476** and $3,728 at fair value)	**232,599**	210,407
Beneficial interests issued by consolidated VIEs (included **$41** and $36 at fair value)	**17,578**	17,841
Long-term debt (included **$76,817** and $75,745 at fair value)	**281,685**	291,498
Total liabilities[(b)]	**3,106,717**	2,426,049
Commitments and contingencies (refer to Notes 28, 29 and 30)		
Stockholders' equity		
Preferred stock ($1 par value; authorized 200,000,000 shares: issued **3,006,250** and 2,699,250 shares)	**30,063**	26,993
Common stock ($1 par value; authorized 9,000,000,000 shares; issued **4,104,933,895** shares)	**4,105**	4,105
Additional paid-in capital	**88,394**	88,522
Retained earnings	**236,990**	223,211
Accumulated other comprehensive income	**7,986**	1,569
Shares held in restricted stock units ("RSU") trust, at cost (**zero** and 472,953 shares)	**—**	(21)
Treasury stock, at cost (**1,055,499,435** and 1,020,912,567 shares)	**(88,184)**	(83,049)
Total stockholders' equity	**279,354**	261,330
Total liabilities and stockholders' equity	**$ 3,386,071**	$ 2,687,379

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. Refer to Note 1 for further information.

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.

(b) The following table presents information on assets and liabilities related to VIEs that are consolidated by the Firm at December 31, 2020 and 2019. The assets of the consolidated VIEs are used to settle the liabilities of those entities. The holders of the beneficial interests do not have recourse to the general credit of JPMorgan Chase. The assets and liabilities in the table below include third-party assets and liabilities of consolidated VIEs and exclude intercompany balances that eliminate in consolidation. Refer to Note 14 for a further discussion.

December 31, (in millions)	2020	2019
Assets		
Trading assets	**$ 1,934**	$ 2,633
Loans	**37,619**	42,931
All other assets	**681**	881
Total assets	**$ 40,234**	$ 46,445
Liabilities		
Beneficial interests issued by consolidated VIEs	**$ 17,578**	$ 17,841
All other liabilities	**233**	447
Total liabilities	**$ 17,811**	$ 18,288

The Notes to Consolidated Financial Statements are an integral part of these statements.

Consolidated statements of changes in stockholders' equity

Year ended December 31, (in millions, except per share data)	2020	2019	2018
Preferred stock			
Balance at January 1	**$ 26,993**	$ 26,068	$ 26,068
Issuance	**4,500**	5,000	1,696
Redemption	**(1,430)**	(4,075)	(1,696)
Balance at December 31	**30,063**	26,993	26,068
Common stock			
Balance at January 1 and December 31	**4,105**	4,105	4,105
Additional paid-in capital			
Balance at January 1	**88,522**	89,162	90,579
Shares issued and commitments to issue common stock for employee share-based compensation awards, and related tax effects	**(72)**	(591)	(738)
Other	**(56)**	(49)	(679)
Balance at December 31	**88,394**	88,522	89,162
Retained earnings			
Balance at January 1	**223,211**	199,202	177,676
Cumulative effect of change in accounting principles	**(2,650)**	62	(183)
Net income	**29,131**	36,431	32,474
Dividends declared:			
Preferred stock	**(1,583)**	(1,587)	(1,551)
Common stock (**$3.60**, $3.40 and $2.72 per share for 2020, 2019 and 2018, respectively)	**(11,119)**	(10,897)	(9,214)
Balance at December 31	**236,990**	223,211	199,202
Accumulated other comprehensive income			
Balance at January 1	**1,569**	(1,507)	(119)
Cumulative effect of change in accounting principles	**–**	–	88
Other comprehensive income/(loss), after-tax	**6,417**	3,076	(1,476)
Balance at December 31	**7,986**	1,569	(1,507)
Shares held in RSU Trust, at cost			
Balance at the beginning of the period	**(21)**	(21)	(21)
Liquidation of RSU Trust	**21**	–	–
Balance at December 31	**–**	(21)	(21)
Treasury stock, at cost			
Balance at January 1	**(83,049)**	(60,494)	(42,595)
Repurchase	**(6,397)**	(24,121)	(19,983)
Reissuance	**1,262**	1,566	2,084
Balance at December 31	**(88,184)**	(83,049)	(60,494)
Total stockholders' equity	**$ 279,354**	$ 261,330	$ 256,515

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. Refer to Note 1 for further information.

The Notes to Consolidated Financial Statements are an integral part of these statements.

Consolidated statements of cash flows

Year ended December 31, (in millions)	2020	2019	2018
Operating activities			
Net income	**$ 29,131**	$ 36,431	$ 32,474
Adjustments to reconcile net income to net cash provided by/(used in) operating activities:			
Provision for credit losses	**17,480**	5,585	4,871
Depreciation and amortization	**8,614**	8,368	7,791
Deferred tax expense	**(3,981)**	949	1,721
Other	**1,649**	1,996	2,717
Originations and purchases of loans held-for-sale[(a)]	**(166,504)**	(169,289)	(172,728)
Proceeds from sales, securitizations and paydowns of loans held-for-sale[(a)]	**175,490**	171,415	163,747
Net change in:			
Trading assets[(a)]	**(148,749)**	6,551	(35,067)
Securities borrowed	**(20,734)**	(27,631)	(6,861)
Accrued interest and accounts receivable	**(18,012)**	(78)	(5,849)
Other assets[(a)]	**(42,434)**	(17,570)	(8,779)
Trading liabilities	**77,198**	(14,516)	18,290
Accounts payable and other liabilities	**7,827**	(352)	14,630
Other operating adjustments[(a)]	**3,115**	2,233	(1,343)
Net cash provided by/(used in) operating activities	**(79,910)**	4,092	15,614
Investing activities			
Net change in:			
Federal funds sold and securities purchased under resale agreements	**(47,115)**	72,396	(123,201)
Held-to-maturity securities:			
Proceeds from paydowns and maturities	**21,360**	3,423	2,945
Purchases	**(12,400)**	(13,427)	(9,368)
Available-for-sale securities:			
Proceeds from paydowns and maturities	**57,675**	52,200	37,401
Proceeds from sales	**149,758**	70,181	46,067
Purchases	**(397,145)**	(242,149)	(95,091)
Proceeds from sales and securitizations of loans held-for-investment	**23,559**	62,095	29,826
Other changes in loans, net[(a)]	**(50,263)**	(51,743)	(83,013)
All other investing activities, net	**(7,341)**	(5,035)	(4,986)
Net cash (used in) investing activities	**(261,912)**	(52,059)	(199,420)
Financing activities			
Net change in:			
Deposits	**602,765**	101,002	26,728
Federal funds purchased and securities loaned or sold under repurchase agreements	**31,528**	1,347	23,415
Short-term borrowings	**4,438**	(28,561)	18,476
Beneficial interests issued by consolidated VIEs	**1,347**	4,289	1,712
Proceeds from long-term borrowings	**78,686**	61,085	71,662
Payments of long-term borrowings	**(105,055)**	(69,610)	(76,313)
Proceeds from issuance of preferred stock	**4,500**	5,000	1,696
Redemption of preferred stock	**(1,430)**	(4,075)	(1,696)
Treasury stock repurchased	**(6,517)**	(24,001)	(19,983)
Dividends paid	**(12,690)**	(12,343)	(10,109)
All other financing activities, net	**(927)**	(1,146)	(1,430)
Net cash provided by financing activities	**596,645**	32,987	34,158
Effect of exchange rate changes on cash and due from banks and deposits with banks	**9,155**	(182)	(2,863)
Net increase/(decrease) in cash and due from banks and deposits with banks	**263,978**	(15,162)	(152,511)
Cash and due from banks and deposits with banks at the beginning of the period	**263,631**	278,793	431,304
Cash and due from banks and deposits with banks at the end of the period	**$ 527,609**	$ 263,631	$ 278,793
Cash interest paid	**$ 13,077**	$ 29,918	$ 21,152
Cash income taxes paid, net	**7,661**	5,624	3,542

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.

The Notes to Consolidated Financial Statements are an integral part of these statements.

Note 1 – Basis of presentation

JPMorgan Chase & Co. ("JPMorgan Chase" or the "Firm"), a financial holding company incorporated under Delaware law in 1968, is a leading global financial services firm in the U.S., with operations worldwide. The Firm is a leader in investment banking, financial services for consumers and small businesses, commercial banking, financial transaction processing and asset management. Refer to Note 32 for a further discussion of the Firm's business segments.

The accounting and financial reporting policies of JPMorgan Chase and its subsidiaries conform to U.S. GAAP. Additionally, where applicable, the policies conform to the accounting and reporting guidelines prescribed by regulatory authorities.

Certain amounts reported in prior periods have been reclassified to conform with the current presentation.

Consolidation

The Consolidated Financial Statements include the accounts of JPMorgan Chase and other entities in which the Firm has a controlling financial interest. All material intercompany balances and transactions have been eliminated.

Assets held for clients in an agency or fiduciary capacity by the Firm are not assets of JPMorgan Chase and are not included on the Consolidated balance sheets.

The Firm determines whether it has a controlling financial interest in an entity by first evaluating whether the entity is a voting interest entity or a variable interest entity.

Voting interest entities

Voting interest entities are entities that have sufficient equity and provide the equity investors voting rights that enable them to make significant decisions relating to the entity's operations. For these types of entities, the Firm's determination of whether it has a controlling interest is primarily based on the amount of voting equity interests held. Entities in which the Firm has a controlling financial interest, through ownership of the majority of the entities' voting equity interests, or through other contractual rights that give the Firm control, are consolidated by the Firm.

Investments in companies in which the Firm has significant influence over operating and financing decisions (but does not own a majority of the voting equity interests) are accounted for (i) in accordance with the equity method of accounting (which requires the Firm to recognize its proportionate share of the entity's net earnings), or (ii) at fair value if the fair value option was elected. These investments are generally included in other assets, with income or loss included in noninterest revenue.

Certain Firm-sponsored asset management funds are structured as limited partnerships or limited liability companies. For many of these entities, the Firm is the general partner or managing member, but the non-affiliated partners or members have the ability to remove the Firm as the general partner or managing member without cause (i.e., kick-out rights), based on a simple majority vote, or the non-affiliated partners or members have rights to participate in important decisions. Accordingly, the Firm does not consolidate these voting interest entities. However, in the limited cases where the non-managing partners or members do not have substantive kick-out or participating rights, the Firm evaluates the funds as VIEs and consolidates the funds if the Firm is the general partner or managing member and has a potentially significant interest.

The Firm's investment companies and asset management funds have investments in both publicly-held and privately-held entities, including investments in buyouts, growth equity and venture opportunities. These investments are accounted for under investment company guidelines and, accordingly, irrespective of the percentage of equity ownership interests held, are carried on the Consolidated balance sheets at fair value, and are recorded in other assets, with income or loss included in noninterest revenue. If consolidated, the Firm retains the accounting under such specialized investment company guidelines.

Variable interest entities

VIEs are entities that, by design, either (1) lack sufficient equity to permit the entity to finance its activities without additional subordinated financial support from other parties, or (2) have equity investors that do not have the ability to make significant decisions relating to the entity's operations through voting rights, or do not have the obligation to absorb the expected losses, or do not have the right to receive the residual returns of the entity.

The most common type of VIE is an SPE. SPEs are commonly used in securitization transactions in order to isolate certain assets and distribute the cash flows from those assets to investors. The basic SPE structure involves a company selling assets to the SPE; the SPE funds the purchase of those assets by issuing securities to investors. The legal documents that govern the transaction specify how the cash earned on the assets must be allocated to the SPE's investors and other parties that have rights to those cash flows. SPEs are generally structured to insulate investors from claims on the SPE's assets by creditors of other entities, including the creditors of the seller of the assets.

The primary beneficiary of a VIE (i.e., the party that has a controlling financial interest) is required to consolidate the assets and liabilities of the VIE. The primary beneficiary is the party that has both (1) the power to direct the activities of the VIE that most significantly impact the VIE's economic performance; and (2) through its interests in the VIE, the obligation to absorb losses or the right to receive benefits from the VIE that could potentially be significant to the VIE.

To assess whether the Firm has the power to direct the activities of a VIE that most significantly impact the VIE's economic performance, the Firm considers all the facts and circumstances, including its role in establishing the VIE and its ongoing rights and responsibilities. This assessment includes, first, identifying the activities that most significantly impact the VIE's economic performance; and second, identifying which party, if any, has power over those activities. In general, the parties that make the most significant decisions affecting the VIE (such as asset managers, collateral managers, servicers, or owners of call options or liquidation rights over the VIE's assets) or have the right to unilaterally remove those decision-makers are deemed to have the power to direct the activities of a VIE.

To assess whether the Firm has the obligation to absorb losses of the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE, the Firm considers all of its economic interests, including debt and equity investments, servicing fees, and derivatives or other arrangements deemed to be variable interests in the VIE. This assessment requires that the Firm apply judgment in determining whether these interests, in the aggregate, are considered potentially significant to the VIE. Factors considered in assessing significance include: the design of the VIE, including its capitalization structure; subordination of interests; payment priority; relative share of interests held across various classes within the VIE's capital structure; and the reasons why the interests are held by the Firm.

The Firm performs on-going reassessments of: (1) whether entities previously evaluated under the majority voting-interest framework have become VIEs, based on certain events, and are therefore subject to the VIE consolidation framework; and (2) whether changes in the facts and circumstances regarding the Firm's involvement with a VIE cause the Firm's consolidation conclusion to change.

Refer to Note 14 for further discussion of the Firm's VIEs.

Revenue recognition

Interest income
The Firm recognizes interest income on loans, debt securities, and other debt instruments, generally on a level-yield basis, based on the underlying contractual rate. Refer to Note 7 for further discussion of interest income.

Revenue from contracts with customers
JPMorgan Chase recognizes noninterest revenue from certain contracts with customers, in investment banking fees, deposit-related fees, asset management administration and commissions, and components of card income, when the Firm's related performance obligations are satisfied. Refer to Note 6 for further discussion of the Firm's revenue from contracts with customers.

Principal transactions revenue
JPMorgan Chase carries a portion of its assets and liabilities at fair value. Changes in fair value are reported primarily in principal transactions revenue. Refer to Notes 2 and 3 for further discussion of fair value measurement. Refer to Note 6 for further discussion of principal transactions revenue.

Use of estimates in the preparation of consolidated financial statements

The preparation of the Consolidated Financial Statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, revenue and expense, and disclosures of contingent assets and liabilities. Actual results could be different from these estimates.

Foreign currency translation

JPMorgan Chase revalues assets, liabilities, revenue and expense denominated in non-U.S. currencies into U.S. dollars using applicable exchange rates.

Gains and losses relating to translating functional currency financial statements for U.S. reporting are included in the Consolidated statements of comprehensive income. Gains and losses relating to nonfunctional currency transactions, including non-U.S. operations where the functional currency is the U.S. dollar, are reported in the Consolidated statements of income.

Offsetting assets and liabilities

U.S. GAAP permits entities to present derivative receivables and derivative payables with the same counterparty and the related cash collateral receivables and payables on a net basis on the Consolidated balance sheets when a legally enforceable master netting agreement exists. U.S. GAAP also permits securities sold and purchased under repurchase agreements and securities borrowed or loaned under securities loan agreements to be presented net when specified conditions are met, including the existence of a legally enforceable master netting agreement. The Firm has elected to net such balances when the specified conditions are met.

The Firm uses master netting agreements to mitigate counterparty credit risk in certain transactions, including derivative contracts, resale, repurchase, securities borrowed and securities loaned agreements. A master netting agreement is a single agreement with a counterparty that permits multiple transactions governed by that agreement to be terminated or accelerated and settled through a single payment in a single currency in the event of a default (e.g., bankruptcy, failure to make a required payment or securities transfer or deliver collateral or margin when due). Upon the exercise of derivatives termination rights by the non-defaulting party (i) all transactions are terminated, (ii) all transactions are valued and the positive values of "in the money" transactions are netted against the negative values of "out of the money" transactions and (iii) the only remaining payment obligation is of one of the parties to pay the netted termination amount. Upon exercise of default rights under repurchase agreements and securities loan agreements in general (i) all transactions are terminated and accelerated, (ii) all values of securities or cash held or to be delivered are calculated, and all such sums are netted against each other and (iii) the only remaining payment obligation is of one of the parties to pay the netted termination amount.

Typical master netting agreements for these types of transactions also often contain a collateral/margin agreement that provides for a security interest in, or title transfer of, securities or cash collateral/margin to the party that has the right to demand margin (the "demanding party"). The collateral/margin agreement typically requires a party to transfer collateral/margin to the demanding party with a value equal to the amount of the margin deficit on a net basis across all transactions governed by the master netting agreement, less any threshold. The collateral/margin agreement grants to the demanding party, upon default by the counterparty, the right to set-off any amounts payable by the counterparty against any posted collateral or the cash equivalent of any posted collateral/margin. It also grants to the demanding party the right to liquidate collateral/margin and to apply the proceeds to an amount payable by the counterparty.

Refer to Note 5 for further discussion of the Firm's derivative instruments. Refer to Note 11 for further discussion of the Firm's securities financing agreements.

Statements of cash flows

For JPMorgan Chase's Consolidated statements of cash flows, cash is defined as those amounts included in cash and due from banks and deposits with banks.

Accounting standard adopted January 1, 2020

Financial Instruments – Credit Losses ("CECL")

The adoption of this guidance established a single allowance framework for all financial assets measured at amortized cost and certain off-balance sheet credit exposures. This framework requires that management's estimate reflects credit losses over the instrument's remaining expected life and considers expected future changes in macroeconomic conditions. Refer to Note 13 for further information. Prior to the adoption of the CECL accounting guidance, the Firm's allowance for credit losses represented management's estimate of probable credit losses inherent in the Firm's retained loan portfolios and certain lending-related commitments.

The following table presents the impacts to the allowance for credit losses and retained earnings upon adoption of this guidance on January 1, 2020:

(in billions)	December 31, 2019	CECL adoption impact	January 1, 2020
Allowance for credit losses			
Consumer, excluding credit card[(a)]	$ 2.6	$ 0.4	$ 3.0
Credit card	5.7	5.5	11.2
Wholesale[(a)]	6.0	(1.6)	4.4
Firmwide	$ 14.3	$ 4.3	$ 18.6
Retained earnings			
Firmwide allowance increase		$ 4.3	
Balance sheet reclassification[(b)]		(0.8)	
Total pre-tax impact		3.5	
Tax effect		(0.8)	
Decrease to retained earnings		$ 2.7	

(a) In conjunction with the adoption of CECL, the Firm reclassified risk-rated business banking and auto dealer loans and lending-related commitments held in CCB from the consumer, excluding credit card portfolio segment to the wholesale portfolio segment, to align with the methodology applied when determining the allowance. Prior-period amounts have been revised to conform with the current presentation. Accordingly, $0.6 billion of the allowance for credit losses at December 31, 2019 and $(0.2) billion of the CECL adoption impact were reclassified.

(b) Represents the recognition of the nonaccretable difference on purchased credit deteriorated loans and the Firm's election to recognize the reserve for uncollectible accrued interest on credit card loans in the allowance, both of which resulted in a corresponding increase to loans.

Securities Financing Agreements

As permitted by the guidance, the Firm elected the fair value option for certain securities financing agreements. The difference between their carrying amount and fair value was immaterial and was recorded as part of the Firm's cumulative-effect adjustment. Refer to Note 11 for further information.

Investment securities

Upon adoption, HTM securities are presented net of an allowance for credit losses. The guidance also amended the previous other-than-temporary impairment ("OTTI") model for AFS securities to incorporate an allowance. Refer to Note 10 for further information.

Credit quality disclosures

As a result of the adoption of this guidance, the Firm expanded credit quality disclosures for financial assets measured at amortized cost particularly within the retained loan portfolios. Refer to Note 12 for further information.

PCD loans

The adoption resulted in a change in the accounting for PCI loans, which are considered purchased credit deteriorated ("PCD") loans under CECL. Upon adoption, the Firm recognized the nonaccretable difference on PCD loans in the allowance, which resulted in a corresponding increase to loans. PCD loans are subject to the Firm's nonaccrual and charge-off policies and are now reported in the consumer, excluding credit card portfolio's residential real estate loan class. Refer to Note 12 for further information.

Changes in credit portfolio segments and classes
In conjunction with the adoption of CECL, the Firm reclassified risk-rated loans and lending-related commitments from the consumer excluding credit card portfolio segment to the wholesale portfolio segment, to align with the methodology applied when determining the allowance. The Firm also revised its loan classes. Prior-period amounts have been revised to conform with the current presentation. Refer to Note 12 for further information.

Accrued interest receivables
As permitted by the guidance, the Firm elected to continue classifying accrued interest on loans, including accrued but unbilled interest on credit card loans, and investment securities in accrued interest and accounts receivables on the Consolidated balance sheets. For credit card loans, accrued interest once billed is then recognized in the loan balances, with the related allowance recorded in the allowance for credit losses. Changes in the allowance for credit losses on accrued interest on credit card loans are recognized in the provision for credit losses and charge-offs are recognized by reversing interest income. For other loans and securities, the Firm generally does not recognize an allowance for credit losses on accrued interest receivables, consistent with its policy to write them off no later than 90 days past due by reversing interest income.

Capital transition provisions
As permitted under the U.S. capital rules issued by the federal banking agencies in 2019, the Firm initially elected to phase-in the January 1, 2020 (“day 1”) CECL adoption impact to retained earnings of $2.7 billion to CET1 capital, at 25% per year in each of 2020 to 2023. As part of their response to the impact of the COVID-19 pandemic, on March 31, 2020, the federal banking agencies issued an interim final rule (issued as final on August 26, 2020) that provided the option to delay the effects of CECL on regulatory capital for two years, followed by a three-year transition period (“CECL capital transition provisions”). Refer to Note 27 for further information.

Accounting standards adopted January 1, 2018
Effective January 1, 2018, the Firm adopted several accounting standards resulting in a net decrease of $183 million to retained earnings and a net increase of $88 million to AOCI. The adoption of the recognition and measurement guidance resulted in $505 million of fair value gains in the first quarter of 2018, recorded in total net revenue, on certain equity investments that were previously held at cost.

Significant accounting policies
The following table identifies JPMorgan Chase’s other significant accounting policies and the Note and page where a detailed description of each policy can be found.

Fair value measurement	Note 2	page 171
Fair value option	Note 3	page 192
Derivative instruments	Note 5	page 198
Noninterest revenue and noninterest expense	Note 6	page 212
Interest income and Interest expense	Note 7	page 215
Pension and other postretirement employee benefit plans	Note 8	page 216
Employee share-based incentives	Note 9	page 221
Investment securities	Note 10	page 223
Securities financing activities	Note 11	page 229
Loans	Note 12	page 232
Allowance for credit losses	Note 13	page 248
Variable interest entities	Note 14	page 253
Goodwill and Mortgage servicing rights	Note 15	page 261
Premises and equipment	Note 16	page 265
Leases	Note 18	page 266
Long-term debt	Note 20	page 269
Earnings per share	Note 23	page 274
Income taxes	Note 25	page 277
Off-balance sheet lending-related financial instruments, guarantees and other commitments	Note 28	page 283
Litigation	Note 30	page 290

Note 2 – Fair value measurement

JPMorgan Chase carries a portion of its assets and liabilities at fair value. These assets and liabilities are predominantly carried at fair value on a recurring basis (i.e., assets and liabilities that are measured and reported at fair value on the Firm's Consolidated balance sheets). Certain assets, liabilities and unfunded lending-related commitments are measured at fair value on a nonrecurring basis; that is, they are not measured at fair value on an ongoing basis but are subject to fair value adjustments only in certain circumstances (for example, when there is evidence of impairment).

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value is based on quoted market prices or inputs, where available. If prices or quotes are not available, fair value is based on valuation models and other valuation techniques that consider relevant transaction characteristics (such as maturity) and use, as inputs, observable or unobservable market parameters, including yield curves, interest rates, volatilities, prices (such as commodity, equity or debt prices), correlations, foreign exchange rates and credit curves. Valuation adjustments may be made to ensure that financial instruments are recorded at fair value, as described below.

The level of precision in estimating unobservable market inputs or other factors can affect the amount of gain or loss recorded for a particular position. Furthermore, while the Firm believes its valuation methods are appropriate and consistent with those of other market participants, the methods and assumptions used reflect management judgment and may vary across the Firm's businesses and portfolios.

The Firm uses various methodologies and assumptions in the determination of fair value. The use of different methodologies or assumptions by other market participants compared with those used by the Firm could result in the Firm deriving a different estimate of fair value at the reporting date.

Valuation process

Risk-taking functions are responsible for providing fair value estimates for assets and liabilities carried on the Consolidated balance sheets at fair value. The Firm's VCG, which is part of the Firm's Finance function and independent of the risk-taking functions, is responsible for verifying these estimates and determining any fair value adjustments that may be required to ensure that the Firm's positions are recorded at fair value. The VGF is composed of senior finance and risk executives and is responsible for overseeing the management of risks arising from valuation activities conducted across the Firm. The Firmwide VGF is chaired by the Firmwide head of the VCG (under the direction of the Firm's Controller), and includes sub-forums covering the CIB, CCB, CB, AWM and certain corporate functions including Treasury and CIO.

Price verification process

The VCG verifies fair value estimates provided by the risk-taking functions by leveraging independently derived prices, valuation inputs and other market data, where available. Where independent prices or inputs are not available, the VCG performs additional review to ensure the reasonableness of the estimates. The additional review may include evaluating the limited market activity including client unwinds, benchmarking valuation inputs to those used for similar instruments, decomposing the valuation of structured instruments into individual components, comparing expected to actual cash flows, reviewing profit and loss trends, and reviewing trends in collateral valuation. There are also additional levels of management review for more significant or complex positions.

The VCG determines any valuation adjustments that may be required to the estimates provided by the risk-taking functions. No adjustments to quoted prices are applied for instruments classified within level 1 of the fair value hierarchy (refer to the discussion below for further information on the fair value hierarchy). For other positions, judgment is required to assess the need for valuation adjustments to appropriately reflect liquidity considerations, unobservable parameters, and, for certain portfolios that meet specified criteria, the size of the net open risk position. The determination of such adjustments follows a consistent framework across the Firm:

- Liquidity valuation adjustments are considered where an observable external price or valuation parameter exists but is of lower reliability, potentially due to lower market activity. Liquidity valuation adjustments are made based on current market conditions. Factors that may be considered in determining the liquidity adjustment include analysis of: (1) the estimated bid-offer spread for the instrument being traded; (2) alternative pricing points for similar instruments in active markets; and (3) the range of reasonable values that the price or parameter could take.
- The Firm manages certain portfolios of financial instruments on the basis of net open risk exposure and, as permitted by U.S. GAAP, has elected to estimate the fair value of such portfolios on the basis of a transfer of the entire net open risk position in an orderly transaction. Where this is the case, valuation adjustments may be necessary to reflect the cost of exiting a larger-than-normal market-size net open risk position. Where applied, such adjustments are based on factors that a relevant market participant would consider in the transfer of the net open risk position, including the size of the adverse market move that is likely to occur during the period required to reduce the net open risk position to a normal market-size.
- Uncertainty adjustments related to unobservable parameters may be made when positions are valued using prices or input parameters to valuation models

that are unobservable due to a lack of market activity or because they cannot be implied from observable market data. Such prices or parameters must be estimated and are, therefore, subject to management judgment. Adjustments are made to reflect the uncertainty inherent in the resulting valuation estimate.

- Where appropriate, the Firm also applies adjustments to its estimates of fair value in order to appropriately reflect counterparty credit quality (CVA), the Firm's own creditworthiness (DVA) and the impact of funding (FVA), using a consistent framework across the Firm. Refer to Credit and funding adjustments on page 188 of this Note for more information on such adjustments.

Valuation model review and approval

If prices or quotes are not available for an instrument or a similar instrument, fair value is generally determined using valuation models that consider relevant transaction terms such as maturity and use as inputs market-based or independently sourced parameters. Where this is the case the price verification process described above is applied to the inputs in those models.

Under the Firm's Estimations and Model Risk Management Policy, the MRGR reviews and approves new models, as well as material changes to existing models, prior to implementation in the operating environment. In certain circumstances exceptions may be granted to the Firm's policy to allow a model to be used prior to review or approval. The MRGR may also require the user to take appropriate actions to mitigate the model risk if it is to be used in the interim. These actions will depend on the model and may include, for example, limitation of trading activity.

Valuation hierarchy

A three-level valuation hierarchy has been established under U.S. GAAP for disclosure of fair value measurements. The valuation hierarchy is based on the observability of inputs to the valuation of an asset or liability as of the measurement date. The three levels are defined as follows.

- Level 1 – inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- Level 2 – inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.
- Level 3 – one or more inputs to the valuation methodology are unobservable and significant to the fair value measurement.

A financial instrument's categorization within the valuation hierarchy is based on the lowest level of input that is significant to the fair value measurement.

The following table describes the valuation methodologies generally used by the Firm to measure its significant products/ instruments at fair value, including the general classification of such instruments pursuant to the valuation hierarchy.

Product/instrument	Valuation methodology	Classifications in the valuation hierarchy
Securities financing agreements	Valuations are based on discounted cash flows, which consider: • Derivative features: refer to the discussion of derivatives below for further information. • Market rates for the respective maturity • Collateral characteristics	Predominantly level 2
Loans and lending-related commitments — wholesale		
Loans carried at fair value (trading loans and non-trading loans) and associated lending-related commitments	Where observable market data is available, valuations are based on: • Observed market prices (circumstances are infrequent) • Relevant broker quotes • Observed market prices for similar instruments Where observable market data is unavailable or limited, valuations are based on discounted cash flows, which consider the following: • Credit spreads derived from the cost of CDS; or benchmark credit curves developed by the Firm, by industry and credit rating • Prepayment speed • Collateral characteristics	Level 2 or 3
Loans — consumer		
Loans carried at fair value — conforming residential mortgage loans expected to be sold	Fair value is based on observable prices for mortgage-backed securities with similar collateral and incorporates adjustments to these prices to account for differences between the securities and the value of the underlying loans, which include credit characteristics, portfolio composition, and liquidity.	Predominantly level 2
Investment and trading securities	Quoted market prices	Level 1
	In the absence of quoted market prices, securities are valued based on: • Observable market prices for similar securities • Relevant broker quotes • Discounted cash flows In addition, the following inputs to discounted cash flows are used for the following products: Mortgage- and asset-backed securities specific inputs: • Collateral characteristics • Deal-specific payment and loss allocations • Current market assumptions related to yield, prepayment speed, conditional default rates and loss severity Collateralized loan obligations ("CLOs") specific inputs: • Collateral characteristics • Deal-specific payment and loss allocations • Expected prepayment speed, conditional default rates, loss severity • Credit spreads • Credit rating data	Level 2 or 3
Physical commodities	Valued using observable market prices or data.	Level 1 or 2

<table>
<tr><th>Product/instrument</th><th>Valuation methodology</th><th>Classifications in the valuation hierarchy</th></tr>
<tr><td rowspan="2">Derivatives</td><td>Exchange-traded derivatives that are actively traded and valued using the exchange price.</td><td>Level 1</td></tr>
<tr><td>Derivatives that are valued using models such as the Black-Scholes option pricing model, simulation models, or a combination of models that may use observable or unobservable valuation inputs as well as considering the contractual terms.

The key valuation inputs used will depend on the type of derivative and the nature of the underlying instruments and may include equity prices, commodity prices, interest rate yield curves, foreign exchange rates, volatilities, correlations, CDS spreads and recovery rates. Additionally, the credit quality of the counterparty and of the Firm as well as market funding levels may also be considered.

In addition, specific inputs used for derivatives that are valued based on models with significant unobservable inputs are as follows:
Structured credit derivatives specific inputs include:
• CDS spreads and recovery rates
• Credit correlation between the underlying debt instruments
Equity option specific inputs include:
• Forward equity price
• Equity volatility
• Equity correlation
• Equity-FX correlation
• Equity-IR correlation
Interest rate and FX exotic options specific inputs include:
• Interest rate volatility
• Interest rate spread volatility
• Interest rate correlation
• Foreign exchange correlation
• Interest rate-FX correlation
Commodity derivatives specific inputs include:
• Commodity volatility
• Forward commodity price
• Commodity correlation
Additionally, adjustments are made to reflect counterparty credit quality (CVA) and the impact of funding (FVA). Refer to page 188 of this Note.</td><td>Level 2 or 3</td></tr>
<tr><td>Mortgage servicing rights</td><td>Refer to Mortgage servicing rights in Note 15.</td><td>Level 3</td></tr>
<tr><td>Private equity direct investments</td><td>Fair value is estimated using all available information; the range of potential inputs include:
• Transaction prices
• Trading multiples of comparable public companies
• Operating performance of the underlying portfolio company
• Adjustments as required, since comparable public companies are not identical to the company being valued, and for company-specific issues and lack of liquidity.
• Additional available inputs relevant to the investment.</td><td>Level 2 or 3</td></tr>
<tr><td rowspan="3">Fund investments (e.g., mutual/collective investment funds, private equity funds, hedge funds, and real estate funds)</td><td>Net asset value</td><td></td></tr>
<tr><td>• NAV is supported by the ability to redeem and purchase at the NAV level.</td><td>Level 1</td></tr>
<tr><td>• Adjustments to the NAV as required, for restrictions on redemption (e.g., lock-up periods or withdrawal limitations) or where observable activity is limited.</td><td>Level 2 or 3(a)</td></tr>
<tr><td>Beneficial interests issued by consolidated VIEs</td><td>Valued using observable market information, where available.
In the absence of observable market information, valuations are based on the fair value of the underlying assets held by the VIE.</td><td>Level 2 or 3</td></tr>
</table>

(a) Excludes certain investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient.

Product/instrument	Valuation methodology	Classification in the valuation hierarchy
Structured notes (included in deposits, short-term borrowings and long-term debt)	• Valuations are based on discounted cash flow analyses that consider the embedded derivative and the terms and payment structure of the note. • The embedded derivative features are considered using models such as the Black-Scholes option pricing model, simulation models, or a combination of models that may use observable or unobservable valuation inputs, depending on the embedded derivative. The specific inputs used vary according to the nature of the embedded derivative features, as described in the discussion above regarding derivatives valuation. Adjustments are then made to this base valuation to reflect the Firm's own credit risk (DVA). Refer to page 188 of this Note.	Level 2 or 3

The following table presents the assets and liabilities reported at fair value as of December 31, 2020 and 2019, by major product category and fair value hierarchy.

Assets and liabilities measured at fair value on a recurring basis

	Fair value hierarchy				
December 31, 2020 (in millions)	Level 1	Level 2	Level 3	Derivative netting adjustments[g]	Total fair value
Federal funds sold and securities purchased under resale agreements	$ —	$ 238,015	$ —	$ —	$ 238,015
Securities borrowed	—	52,983	—	—	52,983
Trading assets:					
Debt instruments:					
Mortgage-backed securities:					
U.S. GSEs and government agencies[a]	—	68,395	449	—	68,844
Residential – nonagency	—	2,138	28	—	2,166
Commercial – nonagency	—	1,327	3	—	1,330
Total mortgage-backed securities	—	71,860	480	—	72,340
U.S. Treasury, GSEs and government agencies[a]	104,263	10,996	—	—	115,259
Obligations of U.S. states and municipalities	—	7,184	8	—	7,192
Certificates of deposit, bankers' acceptances and commercial paper	—	1,230	—	—	1,230
Non-U.S. government debt securities	26,772	40,671	182	—	67,625
Corporate debt securities	—	21,017	507	—	21,524
Loans[b]	—	6,101	893	—	6,994
Asset-backed securities	—	2,304	28	—	2,332
Total debt instruments	131,035	161,363	2,098	—	294,496
Equity securities	97,035	2,652	179	—	99,866
Physical commodities[c]	6,382	5,189	—	—	11,571
Other	—	17,165	346	—	17,511
Total debt and equity instruments[d]	234,452	186,369	2,623	—	423,444
Derivative receivables:					
Interest rate	2,318	386,865	2,307	(355,765)	35,725
Credit	—	12,879	624	(12,823)	680
Foreign exchange	146	205,127	987	(190,479)	15,781
Equity	—	71,279	3,519	(54,125)	20,673
Commodity	—	21,272	231	(14,732)	6,771
Total derivative receivables	2,464	697,422	7,668	(627,924)	79,630
Total trading assets[e]	236,916	883,791	10,291	(627,924)	503,074
Available-for-sale securities:					
Mortgage-backed securities:					
U.S. GSEs and government agencies[a]	21,018	92,283	—	—	113,301
Residential – nonagency	—	10,233	—	—	10,233
Commercial – nonagency	—	2,856	—	—	2,856
Total mortgage-backed securities	21,018	105,372	—	—	126,390
U.S. Treasury and government agencies	201,951	—	—	—	201,951
Obligations of U.S. states and municipalities	—	20,396	—	—	20,396
Certificates of deposit	—	—	—	—	—
Non-U.S. government debt securities	13,135	9,793	—	—	22,928
Corporate debt securities	—	216	—	—	216
Asset-backed securities:					
Collateralized loan obligations	—	10,048	—	—	10,048
Other	—	6,249	—	—	6,249
Total available-for-sale securities	236,104	152,074	—	—	388,178
Loans[b][f]	—	42,169	2,305	—	44,474
Mortgage servicing rights	—	—	3,276	—	3,276
Other assets[b][e]	8,110	4,561	538	—	13,209
Total assets measured at fair value on a recurring basis	$ 481,130	$ 1,373,593	$ 16,410	$ (627,924)	$ 1,243,209
Deposits	$ —	$ 11,571	$ 2,913	$ —	$ 14,484
Federal funds purchased and securities loaned or sold under repurchase agreements	—	155,735	—	—	155,735
Short-term borrowings	—	14,473	2,420	—	16,893
Trading liabilities:					
Debt and equity instruments[d]	82,669	16,838	51	—	99,558
Derivative payables:					
Interest rate	2,496	349,082	2,049	(340,615)	13,012
Credit	—	14,344	848	(13,197)	1,995
Foreign exchange	132	214,373	1,421	(194,493)	21,433
Equity	—	74,032	7,381	(55,515)	25,898
Commodity	—	21,767	962	(14,444)	8,285
Total derivative payables	2,628	673,598	12,661	(618,264)	70,623
Total trading liabilities	85,297	690,436	12,712	(618,264)	170,181
Accounts payable and other liabilities	2,895	513	68	—	3,476
Beneficial interests issued by consolidated VIEs	—	41	—	—	41
Long-term debt	—	53,420	23,397	—	76,817
Total liabilities measured at fair value on a recurring basis	$ 88,192	$ 926,189	$ 41,510	$ (618,264)	$ 437,627

December 31, 2019 (in millions)	Fair value hierarchy Level 1	Level 2	Level 3	Derivative netting adjustments[g]	Total fair value
Federal funds sold and securities purchased under resale agreements	$ –	$ 14,561	$ –	$ –	$ 14,561
Securities borrowed	–	6,237	–	–	6,237
Trading assets:			–		
Debt instruments:			–		
Mortgage-backed securities:			–		
U.S. GSEs and government agencies[a]	–	44,510	797	–	45,307
Residential – nonagency	–	1,977	23	–	2,000
Commercial – nonagency	–	1,486	4	–	1,490
Total mortgage-backed securities	–	47,973	824	–	48,797
U.S. Treasury, GSEs and government agencies[a]	78,289	10,295	–	–	88,584
Obligations of U.S. states and municipalities	–	6,468	10	–	6,478
Certificates of deposit, bankers' acceptances and commercial paper	–	252	–	–	252
Non-U.S. government debt securities	26,600	27,169	155	–	53,924
Corporate debt securities	–	17,956	558	–	18,514
Loans[b]	–	6,340	673	–	7,013
Asset-backed securities	–	2,593	37	–	2,630
Total debt instruments	104,889	119,046	2,257	–	226,192
Equity securities	71,890	244	196	–	72,330
Physical commodities[c]	3,638	3,579	–	–	7,217
Other	–	13,896	232	–	14,128
Total debt and equity instruments[d]	180,417	136,765	2,685	–	319,867
Derivative receivables:					
Interest rate	721	311,173	1,400	(285,873)	27,421
Credit	–	14,252	624	(14,175)	701
Foreign exchange	117	137,938	432	(129,482)	9,005
Equity	–	43,642	2,085	(39,250)	6,477
Commodity	–	17,058	184	(11,080)	6,162
Total derivative receivables	838	524,063	4,725	(479,860)	49,766
Total trading assets[e]	181,255	660,828	7,410	(479,860)	369,633
Available-for-sale securities:					
Mortgage-backed securities:					
U.S. GSEs and government agencies[a]	–	110,117	–	–	110,117
Residential – nonagency	–	12,989	1	–	12,990
Commercial – nonagency	–	5,188	–	–	5,188
Total mortgage-backed securities	–	128,294	1	–	128,295
U.S. Treasury and government agencies	139,436	–	–	–	139,436
Obligations of U.S. states and municipalities	–	29,810	–	–	29,810
Certificates of deposit	–	77	–	–	77
Non-U.S. government debt securities	12,966	8,821	–	–	21,787
Corporate debt securities	–	845	–	–	845
Asset-backed securities:			–	–	–
Collateralized loan obligations	–	24,991	–	–	24,991
Other	–	5,458	–	–	5,458
Total available-for-sale securities	152,402	198,296	1	–	350,699
Loans[b][f]	–	44,439	516	–	44,955
Mortgage servicing rights	–	–	4,699	–	4,699
Other assets[b][e]	7,305	3,824	917	–	12,046
Total assets measured at fair value on a recurring basis	$ 340,962	$ 928,185	$ 13,543	$ (479,860)	$ 802,830
Deposits	$ –	$ 25,229	$ 3,360	$ –	$ 28,589
Federal funds purchased and securities loaned or sold under repurchase agreements	–	549	–	–	549
Short-term borrowings	–	4,246	1,674	–	5,920
Trading liabilities:					
Debt and equity instruments[d]	59,047	16,481	41	–	75,569
Derivative payables:					
Interest rate	795	276,746	1,732	(270,670)	8,603
Credit	–	14,358	763	(13,469)	1,652
Foreign exchange	109	143,960	1,039	(131,950)	13,158
Equity	–	47,261	5,480	(40,204)	12,537
Commodity	–	19,685	200	(12,127)	7,758
Total derivative payables	904	502,010	9,214	(468,420)	43,708
Total trading liabilities	59,951	518,491	9,255	(468,420)	119,277
Accounts payable and other liabilities	3,231	452	45	–	3,728
Beneficial interests issued by consolidated VIEs	–	36	–	–	36
Long-term debt	–	52,406	23,339	–	75,745
Total liabilities measured at fair value on a recurring basis	$ 63,182	$ 601,409	$ 37,673	$ (468,420)	$ 233,844

(a) At December 31, 2020 and 2019, included total U.S. GSE obligations of $117.6 billion and $104.5 billion, respectively, which were mortgage-related.
(b) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.
(c) Physical commodities inventories are generally accounted for at the lower of cost or net realizable value. "Net realizable value" is a term defined in U.S. GAAP as not exceeding fair value less costs to sell ("transaction costs"). Transaction costs for the Firm's physical commodities inventories are either not applicable or immaterial to the value of the inventory. Therefore, net realizable value approximates fair value for the Firm's physical commodities inventories. When fair value hedging has been applied (or when net realizable value is below cost), the carrying value of physical commodities approximates fair value, because under fair value hedge accounting, the cost basis is adjusted for changes in fair value. Refer to Note 5 for a further

discussion of the Firm's hedge accounting relationships. To provide consistent fair value disclosure information, all physical commodities inventories have been included in each period presented.

(d) Balances reflect the reduction of securities owned (long positions) by the amount of identical securities sold but not yet purchased (short positions).

(e) Certain investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient are not required to be classified in the fair value hierarchy. At December 31, 2020 and 2019, the fair values of these investments, which include certain hedge funds, private equity funds, real estate and other funds, were $670 million and $684 million, respectively. Included in these balances at December 31, 2020 and 2019, were trading assets of $52 million and $54 million, respectively, and other assets of $618 million and $630 million, respectively.

(f) At December 31, 2020 and 2019, included within loans were $15.1 billion and $19.8 billion, respectively, of residential first-lien mortgages, and $6.3 billion and $8.2 billion, respectively, of commercial first-lien mortgages. Residential mortgage loans include conforming mortgage loans originated with the intent to sell to U.S. GSEs and government agencies of $8.4 billion and $13.6 billion, respectively.

(g) As permitted under U.S. GAAP, the Firm has elected to net derivative receivables and derivative payables and the related cash collateral received and paid when a legally enforceable master netting agreement exists. The level 3 balances would be reduced if netting were applied, including the netting benefit associated with cash collateral.

Level 3 valuations

The Firm has established well-structured processes for determining fair value, including for instruments where fair value is estimated using significant unobservable inputs (level 3). Refer to pages 171-175 of this Note for further information on the Firm's valuation process and a detailed discussion of the determination of fair value for individual financial instruments.

Estimating fair value requires the application of judgment. The type and level of judgment required is largely dependent on the amount of observable market information available to the Firm. For instruments valued using internally developed valuation models and other valuation techniques that use significant unobservable inputs and are therefore classified within level 3 of the fair value hierarchy, judgments used to estimate fair value are more significant than those required when estimating the fair value of instruments classified within levels 1 and 2.

In arriving at an estimate of fair value for an instrument within level 3, management must first determine the appropriate valuation model or other valuation technique to use. Second, due to the lack of observability of significant inputs, management must assess relevant empirical data in deriving valuation inputs including transaction details, yield curves, interest rates, prepayment speed, default rates, volatilities, correlations, prices (such as commodity, equity or debt prices), valuations of comparable instruments, foreign exchange rates and credit curves.

The following table presents the Firm's primary level 3 financial instruments, the valuation techniques used to measure the fair value of those financial instruments, the significant unobservable inputs, the range of values for those inputs and the weighted or arithmetic averages of such inputs. While the determination to classify an instrument within level 3 is based on the significance of the unobservable inputs to the overall fair value measurement, level 3 financial instruments typically include observable components (that is, components that are actively quoted and can be validated to external sources) in addition to the unobservable components. The level 1 and/or level 2 inputs are not included in the table. In addition, the Firm manages the risk of the observable components of level 3 financial instruments using securities and derivative positions that are classified within levels 1 or 2 of the fair value hierarchy.

The range of values presented in the table is representative of the highest and lowest level input used to value the significant groups of instruments within a product/instrument classification. Where provided, the weighted averages of the input values presented in the table are calculated based on the fair value of the instruments that the input is being used to value.

In the Firm's view, the input range, weighted and arithmetic average values do not reflect the degree of input uncertainty or an assessment of the reasonableness of the Firm's estimates and assumptions. Rather, they reflect the characteristics of the various instruments held by the Firm and the relative distribution of instruments within the range of characteristics. For example, two option contracts may have similar levels of market risk exposure and valuation uncertainty, but may have significantly different implied volatility levels because the option contracts have different underlyings, tenors, or strike prices. The input range and weighted average values will therefore vary from period-to-period and parameter-to-parameter based on the characteristics of the instruments held by the Firm at each balance sheet date.

Level 3 inputs[(a)]

December 31, 2020					
Product/Instrument	**Fair value** (in millions)	**Principal valuation technique**	**Unobservable inputs[(g)]**	**Range of input values**	**Average[(i)]**
Residential mortgage-backed securities and loans[(b)]	$ 1,282	Discounted cash flows	Yield	0% - 18%	6%
			Prepayment speed	0% - 46%	10%
			Conditional default rate	0% - 30%	14%
			Loss severity	0% - 107%	7%
Commercial mortgage-backed securities and loans[(c)]	466	Market comparables	Price	$0 - $101	$84
Corporate debt securities	507	Market comparables	Price	$2 - $116	$85
Loans[(d)]	1,930	Market comparables	Price	$10 - $104	$72
Asset-backed securities	28	Market comparables	Price	$1 - $97	$57
Net interest rate derivatives	238	Option pricing	Interest rate volatility	7bps - 513bps	101bps
			Interest rate spread volatility	11bps - 23bps	15bps
			Interest rate correlation	(65)% - 99%	35%
			IR-FX correlation	(35)% - 50%	0%
	20	Discounted cash flows	Prepayment speed	0% - 30%	8%
Net credit derivatives	(260)	Discounted cash flows	Credit correlation	34% - 65%	48%
			Credit spread	3bps - 1,302bps	441bps
			Recovery rate	0% - 67%	46%
			Conditional default rate	2% - 100%	58%
			Loss severity	100%	100%
	36	Market comparables	Price	$1 - $115	$71
Net foreign exchange derivatives	(298)	Option pricing	IR-FX correlation	(40)% - 65%	18%
	(136)	Discounted cash flows	Prepayment speed	9%	9%
Net equity derivatives	(3,862)	Option pricing	Forward equity price[(h)]	61% - 106%	99%
			Equity volatility	5% - 138%	35%
			Equity correlation	18% - 99%	60%
			Equity-FX correlation	(79)% - 55%	(27)%
			Equity-IR correlation	20% - 50%	28%
Net commodity derivatives	(731)	Option pricing	Oil Commodity Forward	$600 / MT - $609 / MT	$605 / MT
			Forward power price	$12 / MWH - $55 / MWH	$34 / MWH
			Commodity volatility	1% - 58%	29%
			Commodity correlation	(49)% - 95%	23%
MSRs	3,276	Discounted cash flows	Refer to Note 15		
Other assets	299	Discounted cash flows	Credit spread	45bps	45bps
			Yield	4% 30%	7%
	585	Market comparables	Price	$29 - $29	$29
Long-term debt, short-term borrowings, and deposits[(e)]	27,912	Option pricing	Interest rate volatility	7bps - 513bps	101bps
			Interest rate correlation	(65)% - 99%	35%
			IR-FX correlation	(35)% - 50%	0%
			Equity correlation	18% - 99%	60%
			Equity-FX correlation	(79)% - 55%	(27)%
			Equity-IR correlation	20% - 50%	28%
	818	Discounted cash flows	Credit correlation	34% - 65%	48%
Other level 3 assets and liabilities, net[(f)]	250				

(a) The categories presented in the table have been aggregated based upon the product type, which may differ from their classification on the Consolidated balance sheets. Furthermore, the inputs presented for each valuation technique in the table are, in some cases, not applicable to every instrument valued using the technique as the characteristics of the instruments can differ.
(b) Comprises U.S. GSE and government agency securities of $449 million, nonagency securities of $28 million and non-trading loans of $805 million.
(c) Comprises nonagency securities of $3 million, trading loans of $43 million and non-trading loans of $420 million.
(d) Comprises trading loans of $850 million and non-trading loans of $1.1 billion.
(e) Long-term debt, short-term borrowings and deposits include structured notes issued by the Firm that are financial instruments that typically contain embedded derivatives. The estimation of the fair value of structured notes includes the derivative features embedded within the instrument. The significant unobservable inputs are broadly consistent with those presented for derivative receivables.
(f) Includes level 3 assets and liabilities that are insignificant both individually and in aggregate.
(g) Price is a significant unobservable input for certain instruments. When quoted market prices are not readily available, reliance is generally placed on price-based internal valuation techniques. The price input is expressed assuming a par value of $100.
(h) Forward equity price is expressed as a percentage of the current equity price.
(i) Amounts represent weighted averages except for derivative related inputs where arithmetic averages are used.

Changes in and ranges of unobservable inputs

The following discussion provides a description of the impact on a fair value measurement of a change in each unobservable input in isolation, and the interrelationship between unobservable inputs, where relevant and significant. The impact of changes in inputs may not be independent, as a change in one unobservable input may give rise to a change in another unobservable input. Where relationships do exist between two unobservable inputs, those relationships are discussed below. Relationships may also exist between observable and unobservable inputs (for example, as observable interest rates rise, unobservable prepayment rates decline); such relationships have not been included in the discussion below. In addition, for each of the individual relationships described below, the inverse relationship would also generally apply.

The following discussion also provides a description of attributes of the underlying instruments and external market factors that affect the range of inputs used in the valuation of the Firm's positions.

Yield – The yield of an asset is the interest rate used to discount future cash flows in a discounted cash flow calculation. An increase in the yield, in isolation, would result in a decrease in a fair value measurement.

Credit spread – The credit spread is the amount of additional annualized return over the market interest rate that a market participant would demand for taking exposure to the credit risk of an instrument. The credit spread for an instrument forms part of the discount rate used in a discounted cash flow calculation. Generally, an increase in the credit spread would result in a decrease in a fair value measurement.

The yield and the credit spread of a particular mortgage-backed security primarily reflect the risk inherent in the instrument. The yield is also impacted by the absolute level of the coupon paid by the instrument (which may not correspond directly to the level of inherent risk). Therefore, the range of yield and credit spreads reflects the range of risk inherent in various instruments owned by the Firm. The risk inherent in mortgage-backed securities is driven by the subordination of the security being valued and the characteristics of the underlying mortgages within the collateralized pool, including borrower FICO scores, LTV ratios for residential mortgages and the nature of the property and/or any tenants for commercial mortgages. For corporate debt securities, obligations of U.S. states and municipalities and other similar instruments, credit spreads reflect the credit quality of the obligor and the tenor of the obligation.

Prepayment speed – The prepayment speed is a measure of the voluntary unscheduled principal repayments of a prepayable obligation in a collateralized pool. Prepayment speeds generally decline as borrower delinquencies rise. An increase in prepayment speeds, in isolation, would result in a decrease in a fair value measurement of assets valued at a premium to par and an increase in a fair value measurement of assets valued at a discount to par.

Prepayment speeds may vary from collateral pool to collateral pool, and are driven by the type and location of the underlying borrower, and the remaining tenor of the obligation as well as the level and type (e.g., fixed or floating) of interest rate being paid by the borrower. Typically collateral pools with higher borrower credit quality have a higher prepayment rate than those with lower borrower credit quality, all other factors being equal.

Conditional default rate – The conditional default rate is a measure of the reduction in the outstanding collateral balance underlying a collateralized obligation as a result of defaults. While there is typically no direct relationship between conditional default rates and prepayment speeds, collateralized obligations for which the underlying collateral has high prepayment speeds will tend to have lower conditional default rates. An increase in conditional default rates would generally be accompanied by an increase in loss severity and an increase in credit spreads. An increase in the conditional default rate, in isolation, would result in a decrease in a fair value measurement. Conditional default rates reflect the quality of the collateral underlying a securitization and the structure of the securitization itself. Based on the types of securities owned in the Firm's market-making portfolios, conditional default rates are most typically at the lower end of the range presented.

Loss severity – The loss severity (the inverse concept is the recovery rate) is the expected amount of future realized losses resulting from the ultimate liquidation of a particular loan, expressed as the net amount of loss relative to the outstanding loan balance. An increase in loss severity is generally accompanied by an increase in conditional default rates. An increase in the loss severity, in isolation, would result in a decrease in a fair value measurement.

The loss severity applied in valuing a mortgage-backed security investment depends on factors relating to the underlying mortgages, including the LTV ratio, the nature of the lender's lien on the property and other instrument-specific factors.

Correlation – Correlation is a measure of the relationship between the movements of two variables. Correlation is a pricing input for a derivative product where the payoff is driven by one or more underlying risks. Correlation inputs are related to the type of derivative (e.g., interest rate, credit, equity, foreign exchange and commodity) due to the nature of the underlying risks. When parameters are positively correlated, an increase in one parameter will result in an increase in the other parameter. When parameters are negatively correlated, an increase in one parameter will result in a decrease in the other parameter. An increase in correlation can result in an increase or a decrease in a fair value measurement. Given a short correlation position, an increase in correlation, in isolation, would generally result in a decrease in a fair value measurement.

The level of correlation used in the valuation of derivatives with multiple underlying risks depends on a number of factors including the nature of those risks. For example, the correlation between two credit risk exposures would be different than that between two interest rate risk exposures. Similarly, the tenor of the transaction may also impact the correlation input, as the relationship between the underlying risks may be different over different time periods. Furthermore, correlation levels are very much dependent on market conditions and could have a relatively wide range of levels within or across asset classes over time, particularly in volatile market conditions.

Volatility – Volatility is a measure of the variability in possible returns for an instrument, parameter or market index given how much the particular instrument, parameter or index changes in value over time. Volatility is a pricing input for options, including equity options, commodity options, and interest rate options. Generally, the higher the volatility of the underlying, the riskier the instrument. Given a long position in an option, an increase in volatility, in isolation, would generally result in an increase in a fair value measurement.

The level of volatility used in the valuation of a particular option-based derivative depends on a number of factors, including the nature of the risk underlying the option (e.g., the volatility of a particular equity security may be significantly different from that of a particular commodity index), the tenor of the derivative as well as the strike price of the option.

Forward price - Forward price is the price at which the buyer agrees to purchase the asset underlying a forward contract on the predetermined future delivery date, and is such that the value of the contract is zero at inception.

The forward price is used as an input in the valuation of certain derivatives and depends on a number of factors including interest rates, the current price of the underlying asset, and the expected income to be received and costs to be incurred by the seller as a result of holding that asset until the delivery date. An increase in the forward can result in an increase or a decrease in a fair value measurement.

Changes in level 3 recurring fair value measurements

The following tables include a rollforward of the Consolidated balance sheets amounts (including changes in fair value) for financial instruments classified by the Firm within level 3 of the fair value hierarchy for the years ended December 31, 2020, 2019 and 2018. When a determination is made to classify a financial instrument within level 3, the determination is based on the significance of the unobservable inputs to the overall fair value measurement. However, level 3 financial instruments typically include, in addition to the unobservable or level 3 components, observable components (that is, components that are actively quoted and can be validated to external sources); accordingly, the gains and losses in the table below include changes in fair value due in part to observable factors that are part of the valuation methodology. Also, the Firm risk-manages the observable components of level 3 financial instruments using securities and derivative positions that are classified within level 1 or 2 of the fair value hierarchy; as these level 1 and level 2 risk management instruments are not included below, the gains or losses in the following tables do not reflect the effect of the Firm’s risk management activities related to such level 3 instruments.

Year ended December 31, 2020 (in millions)	Fair value measurements using significant unobservable inputs								Change in unrealized gains/(losses) related to financial instruments held at Dec. 31, 2020
	Fair value at January 1, 2020	Total realized/ unrealized gains/(losses)	Purchases[g]	Sales	Settlements[h]	Transfers into level 3[i]	Transfers (out of) level 3[i]	Fair value at Dec. 31, 2020	
Assets:[a]									
Trading assets:									
Debt instruments:									
Mortgage-backed securities:									
U.S. GSEs and government agencies	$ 797	$ (172)	$ 134	$ (149)	$ (161)	$ –	$ –	$ 449	$ (150)
Residential – nonagency	23	2	15	(5)	(4)	–	(3)	28	(1)
Commercial – nonagency	4	–	1	–	(1)	2	(3)	3	–
Total mortgage-backed securities	824	(170)	150	(154)	(166)	2	(6)	480	(151)
U.S. Treasury, GSEs and government agencies	–	–	–	–	–	–	–	–	–
Obligations of U.S. states and municipalities	10	–	–	(1)	(1)	–	–	8	–
Non-U.S. government debt securities	155	21	281	(245)	(7)	–	(23)	182	11
Corporate debt securities	558	(23)	582	(205)	(236)	411	(580)	507	(25)
Loans[b]	673	(73)	1,112	(484)	(182)	791	(944)	893	(40)
Asset-backed securities	37	(3)	44	(40)	(9)	9	(10)	28	(4)
Total debt instruments	2,257	(248)	2,169	(1,129)	(601)	1,213	(1,563)	2,098	(209)
Equity securities	196	(75)	53	(376)	(1)	535	(153)	179	(20)
Other	232	271	245	(9)	(154)	6	(245)	346	206
Total trading assets – debt and equity instruments	2,685	(52) (d)	2,467	(1,514)	(756)	1,754	(1,961)	2,623	(23) (d)
Net derivative receivables:[c]									
Interest rate	(332)	2,682	308	(148)	(2,228)	(332)	308	258	325
Credit	(139)	(212)	73	(154)	181	59	(32)	(224)	(110)
Foreign exchange	(607)	49	49	(24)	83	13	3	(434)	116
Equity	(3,395)	(65)	1,664	(2,317)	1,162	(935)	24	(3,862)	(556)
Commodity	(16)	(546)	27	(241)	356	(310)	(1)	(731)	267
Total net derivative receivables	(4,489)	1,908 (d)	2,121	(2,884)	(446)	(1,505)	302	(4,993)	42 (d)
Available-for-sale securities:									
Mortgage-backed securities	1	–	–	–	(1)	–	–	–	–
Asset-backed securities	–	–	–	–	–	–	–	–	–
Total available-for-sale securities	1	–	–	–	(1)	–	–	–	–
Loans[b]	516	(243) (d)	962	(84)	(733)	2,571	(684)	2,305	(18) (d)
Mortgage servicing rights	4,699	(1,540) (e)	1,192	(176)	(899)	–	–	3,276	(1,540) (e)
Other assets[b]	917	(63) (d)	75	(104)	(320)	40	(7)	538	(3) (d)

Year ended December 31, 2020 (in millions)	Fair value measurements using significant unobservable inputs									Change in unrealized (gains)/losses related to financial instruments held at Dec. 31, 2020
	Fair value at January 1, 2020	Total realized/ unrealized (gains)/losses	Purchases	Sales	Issuances	Settlements[h]	Transfers into level 3[i]	Transfers (out of) level 3[i]	Fair value at Dec. 31, 2020	
Liabilities:[a]										
Deposits	$ 3,360	$ 165 (d)(f)	$ –	$ –	$ 671	$ (605)	$ 265	$ (943)	$ 2,913	$ 455 (d)(f)
Short-term borrowings	1,674	(338) (d)(f)	–	–	5,140	(4,115)	105	(46)	2,420	143 (d)(f)
Trading liabilities – debt and equity instruments	41	(2) (d)	(126)	14	–	(4)	136	(8)	51	(1) (d)
Accounts payable and other liabilities	45	33 (d)	(87)	37	–	–	47	(7)	68	28 (d)
Beneficial interests issued by consolidated VIEs	–	–	–	–	–	–	–	–	–	–
Long-term debt	23,339	40 (d)(f)	–	–	9,883	(9,833)	1,250	(1,282)	23,397	1,920 (d)(f)

Year ended December 31, 2019 (in millions)	Fair value at January 1, 2019	Total realized/ unrealized gains/ (losses)	Purchases[g]	Sales	Settlements[h]	Transfers into level 3[i]	Transfers (out of) level 3[i]	Fair value at Dec. 31, 2019	Change in unrealized gains/(losses) related to financial instruments held at Dec. 31, 2019
	Fair value measurements using significant unobservable inputs								
Assets:[a]									
Trading assets:									
Debt instruments:									
Mortgage-backed securities:									
U.S. GSEs and government agencies	$ 549	$ (62)	$ 773	$ (310)	$ (134)	$ 1	$ (20)	$ 797	$ (58)
Residential – nonagency	64	25	83	(86)	(20)	15	(58)	23	2
Commercial – nonagency	11	2	20	(26)	(14)	15	(4)	4	1
Total mortgage-backed securities	624	(35)	876	(422)	(168)	31	(82)	824	(55)
U.S. Treasury, GSEs and government agencies	–	–	–	–	–	–	–	–	–
Obligations of U.S. states and municipalities	689	13	85	(159)	(8)	–	(610)	10	13
Non-U.S. government debt securities	155	1	290	(287)	–	14	(18)	155	4
Corporate debt securities	334	47	437	(247)	(52)	112	(73)	558	40
Loans[b]	738	29	456	(519)	(82)	437	(386)	673	13
Asset-backed securities	127	–	37	(93)	(40)	28	(22)	37	(3)
Total debt instruments	2,667	55	2,181	(1,727)	(350)	622	(1,191)	2,257	12
Equity securities	232	(41)	58	(103)	(22)	181	(109)	196	(18)
Other	301	(36)	50	(26)	(54)	2	(5)	232	91
Total trading assets – debt and equity instruments	3,200	(22) [d]	2,289	(1,856)	(426)	805	(1,305)	2,685	85 [d]
Net derivative receivables:[c]									
Interest rate	(38)	(394)	109	(125)	5	(7)	118	(332)	(599)
Credit	(107)	(36)	20	(9)	8	29	(44)	(139)	(127)
Foreign exchange	(297)	(551)	17	(67)	312	(22)	1	(607)	(380)
Equity	(2,225)	(310)	397	(573)	(503)	(405)	224	(3,395)	(1,608)
Commodity	(1,129)	497	36	(348)	89	(6)	845	(16)	130
Total net derivative receivables	(3,796)	(794) [d]	579	(1,122)	(89)	(411)	1,144	(4,489)	(2,584) [d]
Available-for-sale securities:									
Mortgage-backed securities	1	–	–	–	–	–	–	1	–
Asset-backed securities	–	–	–	–	–	–	–	–	–
Total available-for-sale securities	1	–	–	–	–	–	–	1	–
Loans[b]	856	59 [d]	236	(188)	(482)	188	(153)	516	38 [d]
Mortgage servicing rights	6,130	(1,180) [e]	1,489	(789)	(951)	–	–	4,699	(1,180) [e]
Other assets[b]	1,161	(150) [d]	229	(166)	(156)	6	(7)	917	(180) [d]

Year ended December 31, 2019 (in millions)	Fair value at January 1, 2019	Total realized/ unrealized (gains)/ losses	Purchases	Sales	Issuances	Settlements[h]	Transfers into level 3[i]	Transfers (out of) level 3[i]	Fair value at Dec. 31, 2019	Change in unrealized (gains)/losses related to financial instruments held at Dec. 31, 2019
	Fair value measurements using significant unobservable inputs									
Liabilities:[a]										
Deposits	$ 4,169	$ 278 [d][f]	$ –	$ –	$ 916	$ (806)	$ 12	$ (1,209)	$ 3,360	$ 307 [d][f]
Short-term borrowings	1,523	229 [d][f]	–	–	3,441	(3,356)	85	(248)	1,674	155 [d][f]
Trading liabilities – debt and equity instruments	50	2 [d]	(22)	41	–	1	16	(47)	41	3 [d]
Accounts payable and other liabilities	10	(2) [d]	(84)	115	–	–	6	–	45	29 [d]
Beneficial interests issued by consolidated VIEs	1	(1) [d]	–	–	–	–	–	–	–	–
Long-term debt	19,418	2,815 [d][f]	–	–	10,441	(8,538)	651	(1,448)	23,339	2,822 [d][f]

Year ended December 31, 2018 (in millions)	Fair value at January 1, 2018	Total realized/ unrealized gains/ (losses)	Purchases[g]	Sales	Settlements[h]	Transfers into level 3[i]	Transfers (out of) level 3[i]	Fair value at Dec. 31, 2018	Change in unrealized gains/(losses) related to financial instruments held at Dec. 31, 2018
	Fair value measurements using significant unobservable inputs								
Assets:[a]									
Trading assets:									
Debt instruments:									
Mortgage-backed securities:									
U.S. GSEs and government agencies	$ 307	$ (23)	$ 478	$ (164)	$ (73)	$ 94	$ (70)	$ 549	$ (21)
Residential – nonagency	60	(2)	78	(50)	(7)	59	(74)	64	1
Commercial – nonagency	11	2	18	(18)	(17)	36	(21)	11	(2)
Total mortgage-backed securities	378	(23)	574	(232)	(97)	189	(165)	624	(22)
U.S. Treasury, GSEs and government agencies	1	–	–	–	–	–	(1)	–	–
Obligations of U.S. states and municipalities	744	(17)	112	(70)	(80)	–	–	689	(17)
Non-U.S. government debt securities	78	(22)	459	(277)	(12)	23	(94)	155	(9)
Corporate debt securities	312	(18)	364	(309)	(48)	262	(229)	334	(1)
Loans[b]	612	1	941	(536)	(219)	619	(680)	738	(13)
Asset-backed securities	153	28	98	(41)	(55)	45	(101)	127	22
Total debt instruments	2,278	(51)	2,548	(1,465)	(511)	1,138	(1,270)	2,667	(40)
Equity securities	295	(40)	118	(120)	(1)	107	(127)	232	9
Other	690	(285)	55	(40)	(118)	3	(4)	301	(301)
Total trading assets – debt and equity instruments	3,263	(376) [d]	2,721	(1,625)	(630)	1,248	(1,401)	3,200	(332) [d]
Net derivative receivables:[c]									
Interest rate	264	150	107	(133)	(430)	(15)	19	(38)	187
Credit	(35)	(40)	5	(7)	(57)	4	23	(107)	(28)
Foreign exchange	(396)	103	52	(20)	30	(108)	42	(297)	(63)
Equity	(3,409)	198	1,676	(2,208)	1,805	(617)	330	(2,225)	561
Commodity	(674)	(73)	1	(72)	(301)	7	(17)	(1,129)	146
Total net derivative receivables	(4,250)	338 [d]	1,841	(2,440)	1,047	(729)	397	(3,796)	803 [d]
Available-for-sale securities:								–	
Mortgage-backed securities	1	–	–	–	–	–	–	1	–
Asset-backed securities	276	1	–	–	(277)	–	–	–	–
Total available-for-sale securities	277	1 [j]	–	–	(277)	–	–	1	–
Loans[b]	2,152	9 [d]	412	(1,256)	(496)	194	(159)	856	(4) [d]
Mortgage servicing rights	6,030	230 [e]	1,246	(636)	(740)	–	–	6,130	230 [e]
Other assets[b]	1,496	(319) [d]	195	(38)	(176)	4	(1)	1,161	(331) [d]

Year ended December 31, 2018 (in millions)	Fair value at January 1, 2018	Total realized/ unrealized (gains)/ losses	Purchases	Sales	Issuances	Settlements[h]	Transfers into level 3[i]	Transfers (out of) level 3[i]	Fair value at Dec. 31, 2018	Change in unrealized (gains)/losses related to financial instruments held at Dec. 31, 2018
	Fair value measurements using significant unobservable inputs									
Liabilities:[a]										
Deposits	$ 4,142	$(136) [d][f]	$ –	$ –	$ 1,437	$ (736)	$ 2	$ (540)	$ 4,169	$ (204) [d][f]
Short-term borrowings	1,665	(329) [d][f]	–	–	3,455	(3,388)	272	(152)	1,523	(131) [d][f]
Trading liabilities – debt and equity instruments	39	19 [d]	(99)	114	–	(1)	14	(36)	50	16 [d]
Accounts payable and other liabilities	13	–	(12)	5	–	–	4	–	10	–
Beneficial interests issued by consolidated VIEs	39	–	–	1	–	(39)	–	–	1	–
Long-term debt	16,125	(1,169) [d][f]	–	–	11,919	(7,769)	1,143	(831)	19,418	(1,385) [d][f]

(a) Level 3 assets at fair value as a percentage of total Firm assets accounted for at fair value (including assets measured at fair value on a nonrecurring basis) were 1%, 2% and 3% at December 31, 2020, 2019 and 2018, respectively. Level 3 liabilities at fair value as a percentage of total Firm liabilities at fair value (including liabilities measured at fair value on a nonrecurring basis) were 9%, 16% and 15% at December 31, 2020, 2019 and 2018, respectively.
(b) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.
(c) All level 3 derivatives are presented on a net basis, irrespective of underlying counterparty.
(d) Predominantly reported in principal transactions revenue, except for changes in fair value for CCB mortgage loans, and lending-related commitments originated with the intent to sell, and mortgage loan purchase commitments, which are reported in mortgage fees and related income.
(e) Changes in fair value for MSRs are reported in mortgage fees and related income.
(f) Realized (gains)/losses due to DVA for fair value option elected liabilities are reported in principal transactions revenue, and they were not material for the years ended December 31, 2020, 2019 and 2018, respectively. Unrealized (gains)/losses are reported in OCI, and they were $221 million, $319 million and $(277) million for the years ended December 31, 2020, 2019 and 2018, respectively.
(g) Loan originations are included in purchases.
(h) Includes financial assets and liabilities that have matured, been partially or fully repaid, impacts of modifications, deconsolidation associated with beneficial interests in VIEs and other items.
(i) All transfers into and/or out of level 3 are based on changes in the observability and/or significance of the valuation inputs and are assumed to occur at the beginning of the quarterly reporting period in which they occur.
(j) Realized gains/(losses) on AFS securities, as well as other-than-temporary impairment ("OTTI") losses that are recorded in earnings, are reported in investment securities gains/(losses). Unrealized gains/(losses) are reported in OCI. There were no realized gains/(losses) and foreign exchange hedge accounting adjustments recorded in income on AFS securities for the years ended December 31, 2020 and 2019, respectively and $1 million recorded for the year ended December 31, 2018. There were no material unrealized gains/(losses) recorded on AFS securities in OCI for the years ended December 31, 2020, 2019 and 2018 respectively.

Level 3 analysis

Consolidated balance sheets changes

Level 3 assets at fair value including assets measured at fair value on a nonrecurring basis were 0.5% of total Firm assets at December 31, 2020. The following describes significant changes to level 3 assets since December 31, 2019, for those items measured at fair value on a recurring basis. Refer to Assets and liabilities measured at fair value on a nonrecurring basis on page 189 for further information on changes impacting items measured at fair value on a nonrecurring basis.

For the year ended December 31, 2020

Level 3 assets were $16.4 billion at December 31, 2020, reflecting an increase of $2.9 billion from December 31, 2019.

The increase for the year ended December 31, 2020 was driven by:

- $907 million increase in gross interest rate derivative receivables and $1.4 billion increase in gross equity derivative receivables largely due to gains net of settlements.
- $1.8 billion increase in non-trading loans due to net transfers.

partially offset by

- $1.4 billion decrease in MSRs due to losses and settlements partially offset by purchases.

Refer to the sections below for additional information.

Transfers between levels for instruments carried at fair value on a recurring basis

During the year ended December 31, 2020, significant transfers from level 2 into level 3 included the following:

- $1.8 billion of total debt and equity instruments, predominantly equity securities and trading loans, driven by a decrease in observability.
- $2.6 billion of gross equity derivative receivables and $3.5 billion of gross equity derivative payables as a result of a decrease in observability and an increase in the significance of unobservable inputs.
- $880 million of gross interest rate derivative payables as a result of a decrease in observability and an increase in the significance of unobservable inputs.
- $2.6 billion of non-trading loans driven by a decrease in observability.
- $1.2 billion of long-term debt driven by a decrease in observability and an increase in the significance of unobservable inputs for structured notes.

During the year ended December 31, 2020, significant transfers from level 3 into level 2 included the following:

- $2.0 billion of total debt and equity instruments, predominantly due to corporate debt and trading loans, driven by an increase in observability.
- $2.4 billion of gross equity derivative receivables and $2.4 billion of gross equity derivative payables as a result of an increase in observability and a decrease in the significance of unobservable inputs.
- $943 million of deposits as a result of an increase in observability and a decrease in the significance of unobservable inputs.
- $1.3 billion of long-term debt driven by an increase in observability and a decrease in the significance of unobservable inputs for structured notes.

During the year ended December 31, 2019, significant transfers from level 2 into level 3 included the following:

- $993 million of total debt and equity instruments, the majority of which were trading loans, driven by a decrease in observability.
- $904 million of gross equity derivative payables as a result of a decrease in observability and an increase in the significance of unobservable inputs.

During the year ended December 31, 2019, significant transfers from level 3 into level 2 included the following:

- $1.5 billion of total debt and equity instruments, the majority of which were obligations of U.S. states and municipalities and trading loans, driven by an increase in observability.
- $1.1 billion of gross equity derivative receivables and $1.3 billion of gross equity derivative payables as a result of an increase in observability and a decrease in the significance of unobservable inputs.
- $962 million of gross commodities derivative payables as a result of an increase in observability.
- $1.2 billion of deposits as a result of an increase in observability and a decrease in the significance of unobservable inputs.
- $1.4 billion of long-term debt as a result of an increase in observability and a decrease in the significance of unobservable inputs.

During the year ended December 31, 2018, significant transfers from level 2 into level 3 included the following:

- $1.4 billion of total debt and equity instruments, the majority of which were trading loans, driven by a decrease in observability.
- $1.0 billion of gross equity derivative receivables and $1.6 billion of gross equity derivative payables as a result of a decrease in observability and an increase in the significance of unobservable inputs.
- $1.1 billion of long-term debt driven by a decrease in observability and an increase in the significance of unobservable inputs for certain structured notes.

During the year ended December 31, 2018, significant transfers from level 3 into level 2 included the following:

- $1.5 billion of total debt and equity instruments, the majority of which were trading loans, driven by an increase in observability.
- $1.2 billion of gross equity derivative receivables and $1.5 billion of gross equity derivative payables as a result of an increase in observability and a decrease in the significance of unobservable inputs.

All transfers are based on changes in the observability and/or significance of the valuation inputs and are assumed to occur at the beginning of the quarterly reporting period in which they occur.

Gains and losses

The following describes significant components of total realized/unrealized gains/(losses) for instruments measured at fair value on a recurring basis for the years ended December 31, 2020, 2019 and 2018. These amounts exclude any effects of the Firm's risk management activities where the financial instruments are classified as level 1 and 2 of the fair value hierarchy. Refer to Changes in level 3 recurring fair value measurements rollforward tables on pages 182-186 for further information on these instruments.

2020

- $10 million of net gains on assets driven by gains in net interest rate derivative receivables due to market movements largely offset by losses in MSRs reflecting faster prepayment speeds on lower rates. Refer to Note 15 for additional information on MSRs.
- $102 million of net gains on liabilities driven by market movements in short-term borrowings.

2019

- $2.1 billion of net losses on assets largely due to MSRs reflecting faster prepayment speeds on lower rates. Refer to Note 15 for additional information on MSRs.
- $3.3 billion of net losses on liabilities predominantly driven by market movements in long-term debt.

2018

- $1.6 billion of net gains on liabilities largely driven by market movements in long-term debt.

Credit and funding adjustments – derivatives

Derivatives are generally valued using models that use as their basis observable market parameters. These market parameters generally do not consider factors such as counterparty nonperformance risk, the Firm's own credit quality, and funding costs. Therefore, it is generally necessary to make adjustments to the base estimate of fair value to reflect these factors.

CVA represents the adjustment, relative to the relevant benchmark interest rate, necessary to reflect counterparty nonperformance risk. The Firm estimates CVA using a scenario analysis to estimate the expected positive credit exposure across all of the Firm's existing positions with each counterparty, and then estimates losses based on the probability of default and estimated recovery rate as a result of a counterparty credit event considering contractual factors designed to mitigate the Firm's credit exposure, such as collateral and legal rights of offset. The key inputs to this methodology are (i) the probability of a default event occurring for each counterparty, as derived from observed or estimated CDS spreads; and (ii) estimated recovery rates implied by CDS spreads, adjusted to consider the differences in recovery rates as a derivative creditor relative to those reflected in CDS spreads, which generally reflect senior unsecured creditor risk.

FVA represents the adjustment to reflect the impact of funding and is recognized where there is evidence that a market participant in the principal market would incorporate it in a transfer of the instrument. The Firm's FVA framework, applied to uncollateralized (including partially collateralized) over-the-counter ("OTC") derivatives incorporates key inputs such as: (i) the expected funding requirements arising from the Firm's positions with each counterparty and collateral arrangements; and (ii) the estimated market funding cost in the principal market which, for derivative liabilities, considers the Firm's credit risk (DVA). For collateralized derivatives, the fair value is estimated by discounting expected future cash flows at the relevant overnight indexed swap rate given the underlying collateral agreement with the counterparty, and therefore a separate FVA is not necessary.

The following table provides the impact of credit and funding adjustments on principal transactions revenue in the respective periods, excluding the effect of any associated hedging activities. The FVA presented below includes the impact of the Firm's own credit quality on the inception value of liabilities as well as the impact of changes in the Firm's own credit quality over time.

Year ended December 31, (in millions)	**2020**	2019	2018
Credit and funding adjustments:			
Derivatives CVA	**$ (337)**	$ 241	$ 193
Derivatives FVA	**(64)**	199	(74)

Valuation adjustments on fair value option elected liabilities

The valuation of the Firm's liabilities for which the fair value option has been elected requires consideration of the Firm's own credit risk. DVA on fair value option elected liabilities reflects changes (subsequent to the issuance of the liability) in the Firm's probability of default and LGD, which are estimated based on changes in the Firm's credit spread observed in the bond market. Realized (gains)/losses due to DVA for fair value option elected liabilities are reported in principal transactions revenue. Unrealized (gains)/losses are reported in OCI. Refer to page 186 in this Note and Note 24 for further information.

Assets and liabilities measured at fair value on a nonrecurring basis

The following tables present the assets and liabilities held as of December 31, 2020 and 2019, respectively, for which nonrecurring fair value adjustments were recorded during the years ended December 31, 2020 and 2019, respectively, by major product category and fair value hierarchy.

December 31, 2020 (in millions)	Fair value hierarchy: Level 1	Level 2	Level 3	Total fair value
Loans	$ –	$ 1,611 (c)	$ 972 (d)	$ 2,583
Other assets[(a)]	–	5	979	984
Total assets measured at fair value on a nonrecurring basis	**$ –**	**$ 1,616**	**$ 1,951**	**$ 3,567**
Accounts payable and other liabilities[(b)]	–	–	12	12
Total liabilities measured at fair value on a nonrecurring basis	**$ –**	**$ –**	**$ 12**	**$ 12**

December 31, 2019 (in millions)	Fair value hierarchy: Level 1	Level 2	Level 3	Total fair value
Loans	$ –	$ 3,462 (c)	$ 269	$ 3,731
Other assets	–	14	1,043 (e)	1,057
Total assets measured at fair value on a nonrecurring basis	$ –	$ 3,476	$ 1,312	$ 4,788

(a) Primarily includes equity securities without readily determinable fair values that were adjusted based on observable price changes in orderly transactions from an identical or similar investment of the same issuer (measurement alternative). Of the $979 million in level 3 assets measured at fair value on a nonrecurring basis as of December 31, 2020, $535 million related to equity securities adjusted based on the measurement alternative. These equity securities are classified as level 3 due to the infrequency of the observable prices and/or the restrictions on the shares.
(b) There were no liabilities measured at fair value on a nonrecurring basis at December 31, 2019.
(c) Primarily includes certain mortgage loans that were reclassified to held-for-sale.
(d) Of the $972 million in level 3 assets measured at fair value on a nonrecurring basis as of December 31, 2020, $602 million related to residential real estate loans carried at the net realizable value of the underlying collateral (e.g., collateral-dependent loans). These amounts are classified as level 3 as they are valued using information from broker's price opinions, appraisals and automated valuation models and discounted based upon the Firm's experience with actual liquidation values. These discounts ranged from 13% to 46% with a weighted average of 27%.
(e) Prior-period amounts have been revised to conform with the current presentation.

Nonrecurring fair value changes

The following table presents the total change in value of assets and liabilities for which fair value adjustments have been recognized for the years ended December 31, 2020, 2019 and 2018, related to assets and liabilities held at those dates.

December 31, (in millions)	**2020**	2019	2018
Loans[(a)]	**$ (393)**	$ (274)	$ (68)
Other assets[(b)]	**(529)**	182 (c)	132
Accounts payable and other liabilities	**(11)**	–	–
Total nonrecurring fair value gains/(losses)	**$ (933)**	$ (92)	$ 64

(a) Includes the impact of certain mortgage loans that were reclassified to held-for-sale.
(b) Included $(134) million, $201 million and $149 million for the years ended December 31, 2020, 2019 and 2018, respectively,of net (losses)/gains as a result of the measurement alternative.
(c) Prior-period amounts have been revised to conform with the current presentation.

Refer to Note 12 for further information about the measurement of collateral-dependent loans.

Equity securities without readily determinable fair values

The Firm measures certain equity securities without readily determinable fair values at cost less impairment (if any), plus or minus observable price changes from an identical or similar investment of the same issuer, with such changes recognized in other income.

In its determination of the new carrying values upon observable price changes, the Firm may adjust the prices if deemed necessary to arrive at the Firm's estimated fair values. Such adjustments may include adjustments to reflect the different rights and obligations of similar securities, and other adjustments that are consistent with the Firm's valuation techniques for private equity direct investments.

The following table presents the carrying value of equity securities without readily determinable fair values held as of December 31, 2020 and 2019, that are measured under the measurement alternative and the related adjustments recorded during the periods presented for those securities with observable price changes. These securities are included in the nonrecurring fair value tables when applicable price changes are observable.

As of or for the year ended December 31, (in millions)	2020	2019
Other assets		
Carrying value[(a)]	$ 2,368	$ 2,441
Upward carrying value changes[(b)]	167	243 [(d)]
Downward carrying value changes/impairment[(c)]	(301)	(42)

(a) The period-end carrying values reflect cumulative purchases and sales in addition to upward and downward carrying value changes.
(b) The cumulative upward carrying value changes between January 1, 2018 and December 31, 2020 were $708 million.
(c) The cumulative downward carrying value changes/impairment between January 1, 2018 and December 31, 2020 were $(430) million.
(d) Prior-period amounts have been revised to conform with the current presentation.

Included in other assets above is the Firm's interest in approximately 40 million Visa Class B common shares, recorded at a nominal carrying value. These shares are subject to certain transfer restrictions currently and will be convertible into Visa Class A common shares upon final resolution of certain litigation matters involving Visa. The conversion rate of Visa Class B common shares into Visa Class A common shares is 1.6228 at December 31, 2020, and may be adjusted by Visa depending on developments related to the litigation matters.

Additional disclosures about the fair value of financial instruments that are not carried on the Consolidated balance sheets at fair value

U.S. GAAP requires disclosure of the estimated fair value of certain financial instruments, which are included in the following table. However, this table does not include other items, such as nonfinancial assets, intangible assets, certain financial instruments, and customer relationships. In the opinion of management, these items, in the aggregate, add significant value to JPMorgan Chase, but their fair value is not disclosed in this table.

Financial instruments for which carrying value approximates fair value

Certain financial instruments that are not carried at fair value on the Consolidated balance sheets are carried at amounts that approximate fair value, due to their short-term nature and generally negligible credit risk. These instruments include cash and due from banks, deposits with banks, federal funds sold, securities purchased under resale agreements and securities borrowed, short-term receivables and accrued interest receivable, short-term borrowings, federal funds purchased, securities loaned and sold under repurchase agreements, accounts payable, and accrued liabilities. In addition, U.S. GAAP requires that the fair value of deposit liabilities with no stated maturity (i.e., demand, savings and certain money market deposits) be equal to their carrying value; recognition of the inherent funding value of these instruments is not permitted.

The following table presents by fair value hierarchy classification the carrying values and estimated fair values at December 31, 2020 and 2019, of financial assets and liabilities, excluding financial instruments that are carried at fair value on a recurring basis, and their classification within the fair value hierarchy.

	December 31, 2020					December 31, 2019				
	Estimated fair value hierarchy					Estimated fair value hierarchy				
(in billions)	Carrying value	Level 1	Level 2	Level 3	Total estimated fair value	Carrying value	Level 1	Level 2	Level 3	Total estimated fair value
Financial assets										
Cash and due from banks	**$ 24.9**	**$ 24.9**	**$ –**	**$ –**	**$ 24.9**	$ 21.7	$ 21.7	$ –	$ –	$ 21.7
Deposits with banks	**502.7**	**502.7**	**–**	**–**	**502.7**	241.9	241.9	–	–	241.9
Accrued interest and accounts receivable	**89.4**	**–**	**89.3**	**0.1**	**89.4**	71.3	–	71.2	0.1	71.3
Federal funds sold and securities purchased under resale agreements	**58.3**	**–**	**58.3**	**–**	**58.3**	234.6	–	234.6	–	234.6
Securities borrowed	**107.7**	**–**	**107.7**	**–**	**107.7**	133.5	–	133.5	–	133.5
Investment securities, held-to-maturity	**201.8**	**53.2**	**152.3**	**–**	**205.5**	47.5	0.1	48.8	–	48.9
Loans, net of allowance for loan losses[(a)]	**940.1**	**–**	**210.9**	**755.6**	**966.5**	939.5	–	214.1	734.9	949.0
Other	**81.8**	**–**	**80.0**	**1.9**	**81.9**	61.3	–	60.6	0.8	61.4
Financial liabilities										
Deposits	**$ 2,129.8**	**$ –**	**$ 2,128.9**	**$ –**	**$ 2,128.9**	$ 1,533.8	$ –	$ 1,534.1	$ –	$ 1,534.1
Federal funds purchased and securities loaned or sold under repurchase agreements	**59.5**	**–**	**59.5**	**–**	**59.5**	183.1	–	183.1	–	183.1
Short-term borrowings	**28.3**	**–**	**28.3**	**–**	**28.3**	35.0	–	35.0	–	35.0
Accounts payable and other liabilities	**186.6**	**–**	**181.9**	**4.3**	**186.2**	164.0	0.1	160.0	3.5	163.6
Beneficial interests issued by consolidated VIEs	**17.5**	**–**	**17.6**	**–**	**17.6**	17.8	–	17.9	–	17.9
Long-term debt	**204.8**	**–**	**209.2**	**3.2**	**212.4**	215.5	–	218.3	3.5	221.8

(a) Fair value is typically estimated using a discounted cash flow model that incorporates the characteristics of the underlying loans (including principal, contractual interest rate and contractual fees) and other key inputs, including expected lifetime credit losses, interest rates, prepayment rates, and primary origination or secondary market spreads. For certain loans, the fair value is measured based on the value of the underlying collateral. Carrying value of the loan takes into account the loan's allowance for loan losses, which represents the loan's expected credit losses over its remaining expected life. The difference between the estimated fair value and carrying value of a loan is generally attributable to changes in market interest rates, including credit spreads, market liquidity premiums and other factors that affect the fair value of a loan but do not affect its carrying value.

The majority of the Firm's lending-related commitments are not carried at fair value on a recurring basis on the Consolidated balance sheets. The carrying value and the estimated fair value of these wholesale lending-related commitments were as follows for the periods indicated.

	December 31, 2020					December 31, 2019				
	Estimated fair value hierarchy					Estimated fair value hierarchy				
(in billions)	Carrying value[(a)(b)]	Level 1	Level 2	Level 3	Total estimated fair value	Carrying value[(a)(b)]	Level 1	Level 2	Level 3	Total estimated fair value
Wholesale lending-related commitments	**$ 2.2**	**$ –**	**$ –**	**$ 2.1**	**$ 2.1**	$ 1.2	$ –	$ –	$ 1.9	$ 1.9

(a) Excludes the current carrying values of the guarantee liability and the offsetting asset, each of which is recognized at fair value at the inception of the guarantees.
(b) Includes the wholesale allowance for lending-related commitments.

The Firm does not estimate the fair value of consumer off-balance sheet lending-related commitments. In many cases, the Firm can reduce or cancel these commitments by providing the borrower notice or, in some cases as permitted by law, without notice. Refer to page 173 of this Note for a further discussion of the valuation of lending-related commitments.

Note 3 – Fair value option

The fair value option provides an option to elect fair value as an alternative measurement for selected financial assets, financial liabilities, unrecognized firm commitments, and written loan commitments.

The Firm has elected to measure certain instruments at fair value for several reasons including to mitigate income statement volatility caused by the differences between the measurement basis of elected instruments (e.g., certain instruments that otherwise would be accounted for on an accrual basis) and the associated risk management arrangements that are accounted for on a fair value basis, as well as to better reflect those instruments that are managed on a fair value basis.

The Firm's election of fair value includes the following instruments:

- Loans purchased or originated as part of securitization warehousing activity, subject to bifurcation accounting, or managed on a fair value basis, including lending-related commitments
- Certain securities financing agreements
- Owned beneficial interests in securitized financial assets that contain embedded credit derivatives, which would otherwise be required to be separately accounted for as a derivative instrument
- Structured notes, which are predominantly financial instruments that contain embedded derivatives, that are issued as part of client-driven activities
- Certain long-term beneficial interests issued by CIB's consolidated securitization trusts where the underlying assets are carried at fair value

Changes in fair value under the fair value option election

The following table presents the changes in fair value included in the Consolidated statements of income for the years ended December 31, 2020, 2019 and 2018, for items for which the fair value option was elected. The profit and loss information presented below only includes the financial instruments that were elected to be measured at fair value; related risk management instruments, which are required to be measured at fair value, are not included in the table.

	2020			2019			2018		
December 31, (in millions)	Principal transactions	All other income	Total changes in fair value recorded[f]	Principal transactions	All other income	Total changes in fair value recorded[f]	Principal transactions	All other income	Total changes in fair value recorded[f]
Federal funds sold and securities purchased under resale agreements	**$ 12**	**$ –**	**$ 12**	$ (36)	$ –	$ (36)	$ (35)	$ –	$ (35)
Securities borrowed	**143**	**–**	**143**	133	–	133	22	–	22
Trading assets:									
Debt and equity instruments, excluding loans	**1,546**	**(1)** [d]	**1,545**	2,482	(1) [d]	2,481	(1,680)	1 [d]	(1,679)
Loans reported as trading assets:									
Changes in instrument-specific credit risk[a]	**135**	**–**	**135**	248	–	248	15	–	15
Other changes in fair value[a]	**(19)**	**–**	**(19)**	(1)	–	(1)	28	–	28
Loans:									
Changes in instrument-specific credit risk[a]	**190**	**7** [d]	**197**	475	2 [d]	477	385	1 [d]	386
Other changes in fair value[a]	**470**	**3,239** [d]	**3,709**	267	1,224 [d]	1,491	138	185 [d]	323
Other assets[a]	**103**	**(65)** [e]	**38**	8	6 [e]	14	11	(45) [e]	(34)
Deposits[b]	**(726)**	**–**	**(726)**	(1,730)	–	(1,730)	181	–	181
Federal funds purchased and securities loaned or sold under repurchase agreements	**(6)**	**–**	**(6)**	(8)	–	(8)	11	–	11
Short-term borrowings[b]	**294**	**–**	**294**	(693)	–	(693)	862	–	862
Trading liabilities	**2**	**–**	**2**	6	–	6	1	–	1
Other liabilities	**(94)**	**–**	**(94)**	(16)	–	(16)	–	–	–
Long-term debt[b][c]	**(2,120)**	(1) [d]	**(2,121)**	(6,173)	1 [d]	(6,172)	2,695	–	2,695

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.
(b) Unrealized gains/(losses) due to instrument-specific credit risk (DVA) for liabilities for which the fair value option has been elected are recorded in OCI and subsequently recorded in principal transactions revenue when realized. Realized gains/(losses) due to instrument-specific credit risk recorded in principal transactions revenue were $20 million for the year ended December 31,2020 and were not material for the years ended December 31, 2019 and 2018.
(c) Long-term debt measured at fair value predominantly relates to structured notes. Although the risk associated with the structured notes is actively managed, the gains/(losses) reported in this table do not include the income statement impact of the risk management instruments used to manage such risk.
(d) Reported in mortgage fees and related income.
(e) Reported in other income.
(f) Changes in fair value exclude contractual interest, which is included in interest income and interest expense for all instruments other than hybrid financial instruments. Refer to Note 7 for further information regarding interest income and interest expense.

Determination of instrument-specific credit risk for items for which the fair value option was elected

The following describes how the gains and losses that are attributable to changes in instrument-specific credit risk, were determined.

- Loans and lending-related commitments: For floating-rate instruments, all changes in value are attributed to instrument-specific credit risk. For fixed-rate instruments, an allocation of the changes in value for the period is made between those changes in value that are interest rate-related and changes in value that are credit-related. Allocations are generally based on an analysis of borrower-specific credit spread and recovery information, where available, or benchmarking to similar entities or industries.
- Long-term debt: Changes in value attributable to instrument-specific credit risk were derived principally from observable changes in the Firm's credit spread as observed in the bond market.
- Securities financing agreements: Generally, for these types of agreements, there is a requirement that collateral be maintained with a market value equal to or in excess of the principal amount loaned; as a result, there would be no adjustment or an immaterial adjustment for instrument-specific credit risk related to these agreements.

Difference between aggregate fair value and aggregate remaining contractual principal balance outstanding

The following table reflects the difference between the aggregate fair value and the aggregate remaining contractual principal balance outstanding as of December 31, 2020 and 2019, for loans, long-term debt and long-term beneficial interests for which the fair value option has been elected.

December 31, (in millions)	2020 Contractual principal outstanding	2020 Fair value	2020 Fair value over/(under) contractual principal outstanding	2019 Contractual principal outstanding	2019 Fair value	2019 Fair value over/(under) contractual principal outstanding
Loans						
Nonaccrual loans						
Loans reported as trading assets[a]	**$ 3,386**	**$ 555**	**$ (2,831)**	$ 2,563	$ 234	$ (2,329)
Loans[a]	**1,867**	**1,507**	**(360)**	964	696	(268)
Subtotal	**5,253**	**2,062**	**(3,191)**	3,527	930	(2,597)
90 or more days past due and government guaranteed[b]						
Loans reported as trading assets	**—**	**—**	**—**	—	—	—
Loans	**328**	**317**	**(11)**	138	129	(9)
Subtotal	**328**	**317**	**(11)**	138	129	(9)
All other performing loans[c]						
Loans reported as trading assets[a]	**7,917**	**6,439**	**(1,478)**	8,288	6,779	(1,509)
Loans[a]	**42,022**	**42,650**	**628**	43,955	44,130	175
Subtotal	**49,939**	**49,089**	**(850)**	52,243	50,909	(1,334)
Total loans	**$ 55,520**	**$ 51,468**	**$ (4,052)**	$ 55,908	$ 51,968	$ (3,940)
Long-term debt						
Principal-protected debt	**$ 40,560** [e]	**$ 40,526**	**$ (34)**	$ 40,124 [e]	$ 39,246	$ (878)
Nonprincipal-protected debt[d]	**NA**	**36,291**	**NA**	NA	36,499	NA
Total long-term debt	**NA**	**$ 76,817**	**NA**	NA	$ 75,745	NA
Long-term beneficial interests						
Nonprincipal-protected debt[d]	**NA**	**$ 41**	**NA**	NA	$ 36	NA
Total long-term beneficial interests	**NA**	**$ 41**	**NA**	NA	$ 36	NA

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.
(b) These balances are excluded from nonaccrual loans as the loans are insured and/or guaranteed by U.S. government agencies.
(c) There were no performing loans that were ninety days or more past due as of December 31, 2020 and 2019.
(d) Remaining contractual principal is not applicable to nonprincipal-protected structured notes and long-term beneficial interests. Unlike principal-protected structured notes and long-term beneficial interests, for which the Firm is obligated to return a stated amount of principal at maturity, nonprincipal-protected structured notes and long-term beneficial interests do not obligate the Firm to return a stated amount of principal at maturity, but for structured notes to return an amount based on the performance of an underlying variable or derivative feature embedded in the note. However, investors are exposed to the credit risk of the Firm as issuer for both nonprincipal-protected and principal-protected notes.
(e) Where the Firm issues principal-protected zero-coupon or discount notes, the balance reflects the contractual principal payment at maturity or, if applicable, the contractual principal payment at the Firm's next call date.

At December 31, 2020 and 2019, the contractual amount of lending-related commitments for which the fair value option was elected was $18.1 billion and $8.6 billion, respectively, with a corresponding fair value of $(39) million and $(120) million, respectively. Refer to Note 28 for further information regarding off-balance sheet lending-related financial instruments. Prior-period amounts have been revised to conform with the current presentation.

Structured note products by balance sheet classification and risk component

The following table presents the fair value of structured notes, by balance sheet classification and the primary risk type.

	December 31, 2020				December 31, 2019			
(in millions)	Long-term debt	Short-term borrowings	Deposits	Total	Long-term debt	Short-term borrowings	Deposits	Total
Risk exposure								
Interest rate	**$ 38,129**	**$ 65**	**$ 5,057**	**$ 43,251**	$ 35,470	$ 34	$ 16,692	$ 52,196
Credit	**6,409**	**1,022**	**—**	**7,431**	5,715	875	—	6,590
Foreign exchange	**3,613**	**92**	**—**	**3,705**	3,862	48	5	3,915
Equity	**26,943**	**5,021**	**6,893**	**38,857**	29,294	4,852	8,177	42,323
Commodity	**250**	**13**	**232**	**495**	472	32	1,454	1,958
Total structured notes	**$ 75,344**	**$ 6,213**	**$ 12,182**	**$ 93,739**	$ 74,813	$ 5,841	$ 26,328	$106,982

Note 4 – Credit risk concentrations

Concentrations of credit risk arise when a number of clients, counterparties or customers are engaged in similar business activities or activities in the same geographic region, or when they have similar economic features that would cause their ability to meet contractual obligations to be similarly affected by changes in economic conditions.

JPMorgan Chase regularly monitors various segments of its credit portfolios to assess potential credit risk concentrations and to obtain additional collateral when deemed necessary and permitted under the Firm's agreements. Senior management is significantly involved in the credit approval and review process, and risk levels are adjusted as needed to reflect the Firm's risk appetite.

In the Firm's consumer portfolio, concentrations are managed primarily by product and by U.S. geographic region, with a key focus on trends and concentrations at the portfolio level, where potential credit risk concentrations can be remedied through changes in underwriting policies and portfolio guidelines. Refer to Note 12 for additional information on the geographic composition of the Firm's consumer loan portfolios. In the wholesale portfolio, credit risk concentrations are evaluated primarily by industry and monitored regularly on both an aggregate portfolio level and on an individual client or counterparty basis.

The Firm's wholesale exposure is managed through loan syndications and participations, loan sales, securitizations, credit derivatives, master netting agreements, collateral and other risk-reduction techniques. Refer to Note 12 for additional information on loans.

The Firm does not believe that its exposure to any particular loan product or industry segment (e.g., real estate), or its exposure to residential real estate loans with high LTV ratios, results in a significant concentration of credit risk.

Terms of loan products and collateral coverage are included in the Firm's assessment when extending credit and establishing its allowance for loan losses.

The table below presents both on–balance sheet and off–balance sheet consumer and wholesale credit exposure by the Firm's three credit portfolio segments as of December 31, 2020 and 2019. The wholesale industry of risk category is generally based on the client or counterparty's primary business activity.

In conjunction with the adoption of CECL, the Firm reclassified risk-rated loans and lending-related commitments from the consumer, excluding credit card portfolio segment to the wholesale portfolio segment, to align with the methodology applied when determining the allowance. Prior-period amounts have been revised to conform with the current presentation. Refer to Note 1 for further information.

	2020				2019			
		On-balance sheet				On-balance sheet		
December 31, (in millions)	Credit exposure[h][i]	Loans[i]	Derivatives	Off-balance sheet[i][k]	Credit exposure[h][i]	Loans[i]	Derivatives	Off-balance sheet[i][k]
Consumer, excluding credit card	**$ 375,898**	**$ 318,579** [j]	**$ —**	**$ 57,319**	$ 357,986	$ 317,817	$ —	$ 40,169
Credit card[a]	**802,722**	**144,216**	**—**	**658,506**	819,644	168,924	—	650,720
Total consumer-related[a]	**1,178,620**	**462,795**	**—**	**715,825**	1,177,630	486,741	—	690,889
Wholesale-related[b]								
Real Estate	**148,498**	**118,299**	**1,385**	**28,814**	150,919	117,709	619	32,591
Individuals and Individual Entities[c]	**122,870**	**109,746**	**1,750**	**11,374**	105,027	94,616	694	9,717
Consumer & Retail	**108,437**	**39,013**	**2,802**	**66,622**	106,986	36,985	1,424	68,577
Technology, Media & Telecommunications	**72,150**	**14,687**	**4,252**	**53,211**	60,033	15,322	2,766	41,945
Asset Managers	**66,573**	**31,059**	**9,277**	**26,237**	54,304	24,008	7,160	23,136
Industrials	**66,470**	**21,143**	**1,851**	**43,476**	62,483	22,063	878	39,542
Healthcare	**60,118**	**19,405**	**3,252**	**37,461**	50,824	17,607	2,078	31,139
Banks & Finance Cos	**54,032**	**31,004**	**8,044**	**14,984**	50,786	31,191	5,165	14,430
Automotive	**43,331**	**17,128**	**5,995**	**20,208**	35,118	18,844	368	15,906
Oil & Gas	**39,159**	**11,267**	**1,643**	**26,249**	41,641	13,101	852	27,688
State & Municipal Govt[d]	**38,286**	**18,054**	**2,347**	**17,885**	30,095	13,271	2,000	14,824
Utilities	**30,124**	**4,874**	**3,340**	**21,910**	34,843	5,157	2,573	27,113
Chemicals & Plastics	**17,176**	**4,884**	**856**	**11,436**	17,499	4,864	459	12,176
Central Govt	**17,025**	**3,396**	**12,313**	**1,316**	14,865	2,840	10,477	1,548
Transportation	**16,232**	**6,566**	**1,495**	**8,171**	14,497	5,253	715	8,529
Metals & Mining	**15,542**	**4,854**	**882**	**9,806**	15,586	5,364	402	9,820
Insurance	**13,141**	**1,042**	**2,527**	**9,572**	12,348	1,356	2,282	8,710
Securities Firms	**8,048**	**469**	**4,838**	**2,741**	7,381	757	4,507	2,117
Financial Markets Infrastructure	**6,515**	**19**	**3,757**	**2,739**	4,121	13	2,482	1,626
All other[e]	**100,713**	**58,038**	**7,024**	**35,651**	79,598	51,357	1,865	26,376
Subtotal	**1,044,440**	**514,947**	**79,630**	**449,863**	948,954	481,678	49,766	417,510
Loans held-for-sale and loans at fair value	**35,111**	**35,111**	**—**	**—**	29,201	29,201	—	—
Receivables from customers[f]	**47,710**	**—**	**—**	**—**	33,706	—	—	—
Total wholesale-related	**1,127,261**	**550,058**	**79,630**	**449,863**	1,011,861	510,879	49,766	417,510
Total exposure[g][h]	**$ 2,305,881**	**$1,012,853**	**$ 79,630**	**$1,165,688**	$ 2,189,491	$ 997,620	$ 49,766	$1,108,399

(a) Also includes commercial card lending-related commitments primarily in CB and CIB.

(b) The industry rankings presented in the table as of December 31, 2019, are based on the industry rankings of the corresponding exposures at December 31, 2020, not actual rankings of such exposures at December 31, 2019.

(c) Individuals and Individual Entities predominantly consists of Wealth Management clients within AWM and includes exposure to personal investment companies and personal and testamentary trusts.

(d) In addition to the credit risk exposure to states and municipal governments (both U.S. and non-U.S.) at December 31, 2020 and 2019, noted above, the Firm held: $7.2 billion and $6.5 billion, respectively, of trading assets; $20.4 billion and $29.8 billion, respectively, of AFS securities; and $12.8 billion and $4.8 billion, respectively, of HTM securities, issued by U.S. state and municipal governments. Refer to Note 2 and Note 10 for further information.

(e) All other includes: SPEs and Private education and civic organizations, representing approximately 92% and 8%, respectively, at December 31, 2020 and 90% and 10%, respectively, at December 31, 2019 . Refer to Note 14 for more information on exposures to SPEs.

(f) Receivables from customers reflect held-for-investment margin loans to brokerage clients in CIB, CCB and AWM that are collateralized by assets maintained in the clients' brokerage accounts (e.g., cash on deposit, liquid and readily marketable debt or equity securities). Because of this collateralization, no allowance for credit losses is generally held against these receivables. To manage its credit risk the Firm establishes margin requirements and monitors the required margin levels on an ongoing basis, and requires clients to deposit additional cash or other collateral, or to reduce positions, when appropriate. These receivables are reported within accrued interest and accounts receivable on the Firm's Consolidated balance sheets.

(g) Excludes cash placed with banks of $516.9 billion and $254.0 billion, at December 31, 2020 and 2019, respectively, which is predominantly placed with various central banks, primarily Federal Reserve Banks.

(h) Credit exposure is net of risk participations and excludes the benefit of credit derivatives used in credit portfolio management activities held against derivative receivables or loans and liquid securities and other cash collateral held against derivative receivables.

(i) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans, which resulted in a corresponding reclassification of certain off-balance sheet commitments. Prior-period amounts have been revised to conform with the current presentation.

(j) At December 31, 2020, included $19.2 billion of loans in Business Banking under the PPP. PPP loans are guaranteed by the SBA. Other than in certain limited circumstances, the Firm typically does not recognize charge-offs, classify as nonaccrual nor record an allowance for loan losses on these loans.

(k) Represents lending-related financial instruments.

Note 5 – Derivative instruments

Derivative contracts derive their value from underlying asset prices, indices, reference rates, other inputs or a combination of these factors and may expose counterparties to risks and rewards of an underlying asset or liability without having to initially invest in, own or exchange the asset or liability. JPMorgan Chase makes markets in derivatives for clients and also uses derivatives to hedge or manage its own risk exposures. Predominantly all of the Firm's derivatives are entered into for market-making or risk management purposes.

Market-making derivatives
The majority of the Firm's derivatives are entered into for market-making purposes. Clients use derivatives to mitigate or modify interest rate, credit, foreign exchange, equity and commodity risks. The Firm actively manages the risks from its exposure to these derivatives by entering into other derivative contracts or by purchasing or selling other financial instruments that partially or fully offset the exposure from client derivatives.

Risk management derivatives
The Firm manages certain market and credit risk exposures using derivative instruments, including derivatives in hedge accounting relationships and other derivatives that are used to manage risks associated with specified assets and liabilities.

The Firm generally uses interest rate derivatives to manage the risk associated with changes in interest rates. Fixed-rate assets and liabilities appreciate or depreciate in market value as interest rates change. Similarly, interest income and expense increase or decrease as a result of variable-rate assets and liabilities resetting to current market rates, and as a result of the repayment and subsequent origination or issuance of fixed-rate assets and liabilities at current market rates. Gains and losses on the derivative instruments related to these assets and liabilities are expected to substantially offset this variability.

Foreign currency derivatives are used to manage the foreign exchange risk associated with certain foreign currency–denominated (i.e., non-U.S. dollar) assets and liabilities and forecasted transactions, as well as the Firm's net investments in certain non-U.S. subsidiaries or branches whose functional currencies are not the U.S. dollar. As a result of fluctuations in foreign currencies, the U.S. dollar–equivalent values of the foreign currency–denominated assets and liabilities or the forecasted revenues or expenses increase or decrease. Gains or losses on the derivative instruments related to these foreign currency–denominated assets or liabilities, or forecasted transactions, are expected to substantially offset this variability.

Commodities derivatives are used to manage the price risk of certain commodities inventories. Gains or losses on these derivative instruments are expected to substantially offset the depreciation or appreciation of the related inventory.

Credit derivatives are used to manage the counterparty credit risk associated with loans and lending-related commitments. Credit derivatives compensate the purchaser when the entity referenced in the contract experiences a credit event, such as bankruptcy or a failure to pay an obligation when due. Credit derivatives primarily consist of CDS. Refer to the Credit derivatives section on pages 209-211 of this Note for a further discussion of credit derivatives.

Refer to the risk management derivatives gains and losses table on page 209 of this Note, and the hedge accounting gains and losses tables on pages 206-208 of this Note for more information about risk management derivatives.

Derivative counterparties and settlement types
The Firm enters into OTC derivatives, which are negotiated and settled bilaterally with the derivative counterparty. The Firm also enters into, as principal, certain ETD such as futures and options, and OTC-cleared derivative contracts with CCPs. ETD contracts are generally standardized contracts traded on an exchange and cleared by the CCP, which is the Firm's counterparty from the inception of the transactions. OTC-cleared derivatives are traded on a bilateral basis and then novated to the CCP for clearing.

Derivative clearing services
The Firm provides clearing services for clients in which the Firm acts as a clearing member at certain exchanges and clearing houses. The Firm does not reflect the clients' derivative contracts in its Consolidated Financial Statements. Refer to Note 28 for further information on the Firm's clearing services.

Accounting for derivatives

All free-standing derivatives that the Firm executes for its own account are required to be recorded on the Consolidated balance sheets at fair value.

As permitted under U.S. GAAP, the Firm nets derivative assets and liabilities, and the related cash collateral receivables and payables, when a legally enforceable master netting agreement exists between the Firm and the derivative counterparty. Refer to Note 1 for further discussion of the offsetting of assets and liabilities. The accounting for changes in value of a derivative depends on whether or not the transaction has been designated and qualifies for hedge accounting. Derivatives that are not designated as hedges are reported and measured at fair value through earnings. The tabular disclosures on pages 202-209 of this Note provide additional information on the amount of, and reporting for, derivative assets, liabilities, gains and losses. Refer to Notes 2 and 3 for a further discussion of derivatives embedded in structured notes.

Derivatives designated as hedges

The Firm applies hedge accounting to certain derivatives executed for risk management purposes – generally interest rate, foreign exchange and commodity derivatives. However, JPMorgan Chase does not seek to apply hedge accounting to all of the derivatives involved in the Firm's risk management activities. For example, the Firm does not apply hedge accounting to purchased CDS used to manage the credit risk of loans and lending-related commitments, because of the difficulties in qualifying such contracts as hedges. For the same reason, the Firm does not apply hedge accounting to certain interest rate, foreign exchange, and commodity derivatives used for risk management purposes.

To qualify for hedge accounting, a derivative must be highly effective at reducing the risk associated with the exposure being hedged. In addition, for a derivative to be designated as a hedge, the risk management objective and strategy must be documented. Hedge documentation must identify the derivative hedging instrument, the asset or liability or forecasted transaction and type of risk to be hedged, and how the effectiveness of the derivative is assessed prospectively and retrospectively. To assess effectiveness, the Firm uses statistical methods such as regression analysis, nonstatistical methods such as dollar-value comparisons of the change in the fair value of the derivative to the change in the fair value or cash flows of the hedged item, and qualitative comparisons of critical terms and the evaluation of any changes in those terms. The extent to which a derivative has been, and is expected to continue to be, highly effective at offsetting changes in the fair value or cash flows of the hedged item must be assessed and documented at least quarterly. If it is determined that a derivative is not highly effective at hedging the designated exposure, hedge accounting is discontinued.

There are three types of hedge accounting designations: fair value hedges, cash flow hedges and net investment hedges. JPMorgan Chase uses fair value hedges primarily to hedge fixed-rate long-term debt, AFS securities and certain commodities inventories. For qualifying fair value hedges, the changes in the fair value of the derivative, and in the value of the hedged item for the risk being hedged, are recognized in earnings. Certain amounts excluded from the assessment of effectiveness are recorded in OCI and recognized in earnings over the life of the derivative. If the hedge relationship is terminated, then the adjustment to the hedged item continues to be reported as part of the basis of the hedged item, and for benchmark interest rate hedges, is amortized to earnings as a yield adjustment. Derivative amounts affecting earnings are recognized consistent with the classification of the hedged item – primarily net interest income and principal transactions revenue.

JPMorgan Chase uses cash flow hedges primarily to hedge the exposure to variability in forecasted cash flows from floating-rate assets and liabilities and foreign currency–denominated revenue and expense. For qualifying cash flow hedges, changes in the fair value of the derivative are recorded in OCI and recognized in earnings as the hedged item affects earnings. Derivative amounts affecting earnings are recognized consistent with the classification of the hedged item – primarily noninterest revenue, net interest income and compensation expense. If the hedge relationship is terminated, then the change in value of the derivative recorded in AOCI is recognized in earnings when the cash flows that were hedged affect earnings. For hedge relationships that are discontinued because a forecasted transaction is expected to not occur according to the original hedge forecast, any related derivative values recorded in AOCI are immediately recognized in earnings.

JPMorgan Chase uses net investment hedges to protect the value of the Firm's net investments in certain non-U.S. subsidiaries or branches whose functional currencies are not the U.S. dollar. For qualifying net investment hedges, changes in the fair value of the derivatives due to changes in spot foreign exchange rates are recorded in OCI as translation adjustments. Amounts excluded from the assessment of effectiveness are recorded directly in earnings.

The following table outlines the Firm's primary uses of derivatives and the related hedge accounting designation or disclosure category.

Type of Derivative	Use of Derivative	Designation and disclosure	Affected segment or unit	Page reference
Manage specifically identified risk exposures in qualifying hedge accounting relationships:				
• Interest rate	Hedge fixed rate assets and liabilities	Fair value hedge	Corporate	206-207
• Interest rate	Hedge floating-rate assets and liabilities	Cash flow hedge	Corporate	208
• Foreign exchange	Hedge foreign currency-denominated assets and liabilities	Fair value hedge	Corporate	206-207
• Foreign exchange	Hedge foreign currency-denominated forecasted revenue and expense	Cash flow hedge	Corporate	208
• Foreign exchange	Hedge the value of the Firm's investments in non-U.S. dollar functional currency entities	Net investment hedge	Corporate	208
• Commodity	Hedge commodity inventory	Fair value hedge	CIB	206-207
Manage specifically identified risk exposures not designated in qualifying hedge accounting relationships:				
• Interest rate	Manage the risk associated with mortgage commitments, warehouse loans and MSRs	Specified risk management	CCB	209
• Credit	Manage the credit risk associated with wholesale lending exposures	Specified risk management	CIB	209
• Interest rate and foreign exchange	Manage the risk associated with certain other specified assets and liabilities	Specified risk management	Corporate	209
Market-making derivatives and other activities:				
• Various	Market-making and related risk management	Market-making and other	CIB	209
• Various	Other derivatives	Market-making and other	CIB, AWM, Corporate	209

Notional amount of derivative contracts

The following table summarizes the notional amount of derivative contracts outstanding as of December 31, 2020 and 2019.

	Notional amounts[b]	
December 31, (in billions)	**2020**	2019
Interest rate contracts		
Swaps	**$ 20,986**	$ 21,228
Futures and forwards	**3,057**	3,152
Written options	**3,375**	3,938
Purchased options	**3,675**	4,361
Total interest rate contracts	**31,093**	32,679
Credit derivatives[a]	**1,201**	1,242
Foreign exchange contracts		
Cross-currency swaps	**3,924**	3,604
Spot, futures and forwards	**6,871**	5,577
Written options	**830**	700
Purchased options	**825**	718
Total foreign exchange contracts	**12,450**	10,599
Equity contracts		
Swaps	**448**	406
Futures and forwards	**140**	142
Written options	**676**	646
Purchased options	**621**	611
Total equity contracts	**1,885**	1,805
Commodity contracts		
Swaps	**138**	147
Spot, futures and forwards	**198**	211
Written options	**124**	135
Purchased options	**105**	124
Total commodity contracts	**565**	617
Total derivative notional amounts	**$ 47,194**	$ 46,942

(a) Refer to the Credit derivatives discussion on pages 209-211 for more information on volumes and types of credit derivative contracts.
(b) Represents the sum of gross long and gross short third-party notional derivative contracts.

While the notional amounts disclosed above give an indication of the volume of the Firm's derivatives activity, the notional amounts significantly exceed, in the Firm's view, the possible losses that could arise from such transactions. For most derivative contracts, the notional amount is not exchanged; it is simply a reference amount used to calculate payments.

Impact of derivatives on the Consolidated balance sheets

The following table summarizes information on derivative receivables and payables (before and after netting adjustments) that are reflected on the Firm's Consolidated balance sheets as of December 31, 2020 and 2019, by accounting designation (e.g., whether the derivatives were designated in qualifying hedge accounting relationships or not) and contract type.

Free-standing derivative receivables and payables[(a)]

	Gross derivative receivables				Gross derivative payables			
December 31, 2020 (in millions)	Not designated as hedges	Designated as hedges	Total derivative receivables	Net derivative receivables[(b)]	Not designated as hedges	Designated as hedges	Total derivative payables	Net derivative payables[(b)]
Trading assets and liabilities								
Interest rate	**$ 390,659**	**$ 831**	**$ 391,490**	**$ 35,725**	**$ 353,627**	**$ –**	**$ 353,627**	**$ 13,012**
Credit	**13,503**	**–**	**13,503**	**680**	**15,192**	**–**	**15,192**	**1,995**
Foreign exchange	**205,359**	**901**	**206,260**	**15,781**	**214,229**	**1,697**	**215,926**	**21,433**
Equity	**74,798**	**–**	**74,798**	**20,673**	**81,413**	**–**	**81,413**	**25,898**
Commodity	**20,579**	**924**	**21,503**	**6,771**	**20,834**	**1,895**	**22,729**	**8,285**
Total fair value of trading assets and liabilities	**$ 704,898**	**$ 2,656**	**$ 707,554**	**$ 79,630**	**$ 685,295**	**$ 3,592**	**$ 688,887**	**$ 70,623**

	Gross derivative receivables				Gross derivative payables			
December 31, 2019 (in millions)	Not designated as hedges	Designated as hedges	Total derivative receivables	Net derivative receivables[(b)]	Not designated as hedges	Designated as hedges	Total derivative payables	Net derivative payables[(b)]
Trading assets and liabilities								
Interest rate	$ 312,451	$ 843	$ 313,294	$ 27,421	$ 279,272	$ 1	$ 279,273	$ 8,603
Credit	14,876	–	14,876	701	15,121	–	15,121	1,652
Foreign exchange	138,179	308	138,487	9,005	144,125	983	145,108	13,158
Equity	45,727	–	45,727	6,477	52,741	–	52,741	12,537
Commodity	16,914	328	17,242	6,162	19,736	149	19,885	7,758
Total fair value of trading assets and liabilities	$ 528,147	$ 1,479	$ 529,626	$ 49,766	$ 510,995	$ 1,133	$ 512,128	$ 43,708

(a) Balances exclude structured notes for which the fair value option has been elected. Refer to Note 3 for further information.
(b) As permitted under U.S. GAAP, the Firm has elected to net derivative receivables and derivative payables and the related cash collateral receivables and payables when a legally enforceable master netting agreement exists.

Derivatives netting

The following tables present, as of December 31, 2020 and 2019, gross and net derivative receivables and payables by contract and settlement type. Derivative receivables and payables, as well as the related cash collateral from the same counterparty, have been netted on the Consolidated balance sheets where the Firm has obtained an appropriate legal opinion with respect to the master netting agreement. Where such a legal opinion has not been either sought or obtained, amounts are not eligible for netting on the Consolidated balance sheets, and those derivative receivables and payables are shown separately in the tables below.

In addition to the cash collateral received and transferred that is presented on a net basis with derivative receivables and payables, the Firm receives and transfers additional collateral (financial instruments and cash). These amounts mitigate counterparty credit risk associated with the Firm's derivative instruments, but are not eligible for net presentation:

- collateral that consists of liquid securities and other cash collateral held at third-party custodians, which are shown separately as "Collateral not nettable on the Consolidated balance sheets" in the tables below, up to the fair value exposure amount. Liquid securities represent high quality liquid assets as defined in the LCR rule;
- the amount of collateral held or transferred that exceeds the fair value exposure at the individual counterparty level, as of the date presented, which is excluded from the tables below; and
- collateral held or transferred that relates to derivative receivables or payables where an appropriate legal opinion has not been either sought or obtained with respect to the master netting agreement, which is excluded from the tables below.

	2020			2019		
December 31, (in millions)	Gross derivative receivables	Amounts netted on the Consolidated balance sheets	Net derivative receivables	Gross derivative receivables	Amounts netted on the Consolidated balance sheets	Net derivative receivables
U.S. GAAP nettable derivative receivables						
Interest rate contracts:						
OTC	**$ 367,056**	**$ (337,451)**	**$ 29,605**	$ 299,205	$ (276,255)	$ 22,950
OTC-cleared	**18,340**	**(17,919)**	**421**	9,442	(9,360)	82
Exchange-traded[(a)]	**554**	**(395)**	**159**	347	(258)	89
Total interest rate contracts	**385,950**	**(355,765)**	**30,185**	308,994	(285,873)	23,121
Credit contracts:						
OTC	**9,052**	**(8,514)**	**538**	10,743	(10,317)	426
OTC-cleared	**4,326**	**(4,309)**	**17**	3,864	(3,858)	6
Total credit contracts	**13,378**	**(12,823)**	**555**	14,607	(14,175)	432
Foreign exchange contracts:						
OTC	**201,349**	**(189,655)**	**11,694**	136,252	(129,324)	6,928
OTC-cleared	**834**	**(819)**	**15**	185	(152)	33
Exchange-traded[(a)]	**35**	**(5)**	**30**	10	(6)	4
Total foreign exchange contracts	**202,218**	**(190,479)**	**11,739**	136,447	(129,482)	6,965
Equity contracts:						
OTC	**34,030**	**(27,374)**	**6,656**	23,106	(20,820)	2,286
Exchange-traded[(a)]	**28,294**	**(26,751)**	**1,543**	19,654	(18,430)	1,224
Total equity contracts	**62,324**	**(54,125)**	**8,199**	42,760	(39,250)	3,510
Commodity contracts:						
OTC	**10,924**	**(7,901)**	**3,023**	7,093	(5,149)	1,944
OTC-cleared	**20**	**(20)**	**–**	28	(28)	–
Exchange-traded[(a)]	**6,833**	**(6,811)**	**22**	6,154	(5,903)	251
Total commodity contracts	**17,777**	**(14,732)**	**3,045**	13,275	(11,080)	2,195
Derivative receivables with appropriate legal opinion	**681,647**	**(627,924)**	**53,723** [(d)]	516,083	(479,860)	36,223 [(d)]
Derivative receivables where an appropriate legal opinion has not been either sought or obtained	**25,907**		**25,907**	13,543		13,543
Total derivative receivables recognized on the Consolidated balance sheets	**$ 707,554**		**$ 79,630**	$ 529,626		$ 49,766
Collateral not nettable on the Consolidated balance sheets[(b)(c)]			**(14,806)**			(13,052)
Net amounts			**$ 64,824**			$ 36,714

December 31, (in millions)	2020 Gross derivative payables	2020 Amounts netted on the Consolidated balance sheets	2020 Net derivative payables	2019 Gross derivative payables	2019 Amounts netted on the Consolidated balance sheets	2019 Net derivative payables
U.S. GAAP nettable derivative payables						
Interest rate contracts:						
OTC	**$ 331,854**	**$ (320,780)**	**$ 11,074**	$ 267,311	$ (260,229)	$ 7,082
OTC-cleared	**19,710**	**(19,494)**	**216**	10,217	(10,138)	79
Exchange-traded[(a)]	**358**	**(341)**	**17**	365	(303)	62
Total interest rate contracts	**351,922**	**(340,615)**	**11,307**	277,893	(270,670)	7,223
Credit contracts:						
OTC	**10,671**	**(9,141)**	**1,530**	11,570	(10,080)	1,490
OTC-cleared	**4,075**	**(4,056)**	**19**	3,390	(3,389)	1
Total credit contracts	**14,746**	**(13,197)**	**1,549**	14,960	(13,469)	1,491
Foreign exchange contracts:						
OTC	**210,803**	**(193,672)**	**17,131**	142,360	(131,792)	10,568
OTC-cleared	**836**	**(819)**	**17**	186	(152)	34
Exchange-traded[(a)]	**34**	**(2)**	**32**	12	(6)	6
Total foreign exchange contracts	**211,673**	**(194,493)**	**17,180**	142,558	(131,950)	10,608
Equity contracts:						
OTC	**35,330**	**(28,763)**	**6,567**	27,594	(21,778)	5,816
Exchange-traded[(a)]	**34,491**	**(26,752)**	**7,739**	20,216	(18,426)	1,790
Total equity contracts	**69,821**	**(55,515)**	**14,306**	47,810	(40,204)	7,606
Commodity contracts:						
OTC	**10,365**	**(7,544)**	**2,821**	8,714	(6,235)	2,479
OTC-cleared	**32**	**(32)**	**–**	30	(30)	–
Exchange-traded[(a)]	**7,391**	**(6,868)**	**523**	6,012	(5,862)	150
Total commodity contracts	**17,788**	**(14,444)**	**3,344**	14,756	(12,127)	2,629
Derivative payables with appropriate legal opinion	**665,950**	**(618,264)**	**47,686** [(d)]	497,977	(468,420)	29,557 [(d)]
Derivative payables where an appropriate legal opinion has not been either sought or obtained	**22,937**		**22,937**	14,151		14,151
Total derivative payables recognized on the Consolidated balance sheets	**$ 688,887**		**$ 70,623**	$ 512,128		$ 43,708
Collateral not nettable on the Consolidated balance sheets[(b)(c)]			**(11,964)**			(6,960)
Net amounts			**$ 58,659**			$ 36,748

(a) Exchange-traded derivative balances that relate to futures contracts are settled daily.

(b) Includes liquid securities and other cash collateral held at third-party custodians related to derivative instruments where an appropriate legal opinion has been obtained. For some counterparties, the collateral amounts of financial instruments may exceed the derivative receivables and derivative payables balances. Where this is the case, the total amount reported is limited to the net derivative receivables and net derivative payables balances with that counterparty. In the fourth quarter of 2020, the Firm refined its approach for disclosing additional collateral held by the Firm that may be used as security when the fair value of the client's exposure is in the Firm's favor. Prior-period amounts have been revised to conform with the current presentation.

(c) Derivative collateral relates only to OTC and OTC-cleared derivative instruments.

(d) Net derivatives receivable included cash collateral netted of $88.0 billion and $65.9 billion at December 31, 2020 and 2019, respectively. Net derivatives payable included cash collateral netted of $78.4 billion and $54.4 billion at December 31, 2020 and 2019, respectively. Derivative cash collateral relates to OTC and OTC-cleared derivative instruments.

Liquidity risk and credit-related contingent features

In addition to the specific market risks introduced by each derivative contract type, derivatives expose JPMorgan Chase to credit risk — the risk that derivative counterparties may fail to meet their payment obligations under the derivative contracts and the collateral, if any, held by the Firm proves to be of insufficient value to cover the payment obligation. It is the policy of JPMorgan Chase to actively pursue, where possible, the use of legally enforceable master netting arrangements and collateral agreements to mitigate derivative counterparty credit risk inherent in derivative receivables.

While derivative receivables expose the Firm to credit risk, derivative payables expose the Firm to liquidity risk, as the derivative contracts typically require the Firm to post cash or securities collateral with counterparties as the fair value of the contracts moves in the counterparties' favor or upon specified downgrades in the Firm's and its subsidiaries' respective credit ratings. Certain derivative contracts also provide for termination of the contract, generally upon a downgrade of either the Firm or the counterparty, at the fair value of the derivative contracts. The following table shows the aggregate fair value of net derivative payables related to OTC and OTC-cleared derivatives that contain contingent collateral or termination features that may be triggered upon a ratings downgrade, and the associated collateral the Firm has posted in the normal course of business, at December 31, 2020 and 2019.

OTC and OTC-cleared derivative payables containing downgrade triggers

December 31, (in millions)	**2020**	2019
Aggregate fair value of net derivative payables	**$ 27,712**	$ 14,819
Collateral posted	**26,289**	13,329

The following table shows the impact of a single-notch and two-notch downgrade of the long-term issuer ratings of JPMorgan Chase & Co. and its subsidiaries, predominantly JPMorgan Chase Bank, N.A., at December 31, 2020 and 2019, related to OTC and OTC-cleared derivative contracts with contingent collateral or termination features that may be triggered upon a ratings downgrade. Derivatives contracts generally require additional collateral to be posted or terminations to be triggered when the predefined threshold rating is breached. A downgrade by a single rating agency that does not result in a rating lower than a preexisting corresponding rating provided by another major rating agency will generally not result in additional collateral (except in certain instances in which additional initial margin may be required upon a ratings downgrade), nor in termination payments requirements. The liquidity impact in the table is calculated based upon a downgrade below the lowest current rating of the rating agencies referred to in the derivative contract.

Liquidity impact of downgrade triggers on OTC and OTC-cleared derivatives

	2020		2019	
December 31, (in millions)	Single-notch downgrade	Two-notch downgrade	Single-notch downgrade	Two-notch downgrade
Amount of additional collateral to be posted upon downgrade[a]	**$ 119**	**$ 1,243**	$ 189	$ 1,467
Amount required to settle contracts with termination triggers upon downgrade[b]	**153**	**2,449**	104	1,398

(a) Includes the additional collateral to be posted for initial margin.
(b) Amounts represent fair values of derivative payables, and do not reflect collateral posted.

Derivatives executed in contemplation of a sale of the underlying financial asset

In certain instances the Firm enters into transactions in which it transfers financial assets but maintains the economic exposure to the transferred assets by entering into a derivative with the same counterparty in contemplation of the initial transfer. The Firm generally accounts for such transfers as collateralized financing transactions as described in Note 11, but in limited circumstances they may qualify to be accounted for as a sale and a derivative under U.S. GAAP. The amount of such transfers accounted for as a sale where the associated derivative was outstanding was not material at both December 31, 2020 and 2019.

Impact of derivatives on the Consolidated statements of income

The following tables provide information related to gains and losses recorded on derivatives based on their hedge accounting designation or purpose.

Fair value hedge gains and losses

The following tables present derivative instruments, by contract type, used in fair value hedge accounting relationships, as well as pre-tax gains/(losses) recorded on such derivatives and the related hedged items for the years ended December 31, 2020, 2019 and 2018, respectively. The Firm includes gains/(losses) on the hedging derivative in the same line item in the Consolidated statements of income as the related hedged item.

	Gains/(losses) recorded in income			Income statement impact of excluded components[e]		OCI impact
Year ended December 31, 2020 (in millions)	Derivatives	Hedged items	Income statement impact	Amortization approach	Changes in fair value	Derivatives - Gains/(losses) recorded in OCI[f]
Contract type						
Interest rate[a][b]	**$ 2,962**	**$ (1,889)**	**$ 1,073**	**$ –**	**$ 1,093**	**$ –**
Foreign exchange[c]	**793**	**(619)**	**174**	**(457)**	**174**	**25**
Commodity[d]	**(2,507)**	**2,650**	**143**	**–**	**137**	**–**
Total	**$ 1,248**	**$ 142**	**$ 1,390**	**$ (457)**	**$ 1,404**	**$ 25**

	Gains/(losses) recorded in income			Income statement impact of excluded components[e]		OCI impact
Year ended December 31, 2019 (in millions)	Derivatives	Hedged items	Income statement impact	Amortization approach	Changes in fair value	Derivatives - Gains/(losses) recorded in OCI[f]
Contract type						
Interest rate[a][b]	$ 3,204	$ (2,373)	$ 831	$ –	$ 828	$ –
Foreign exchange[c]	154	328	482	(866)	482	39
Commodity[d]	(77)	148	71	–	63	–
Total	$ 3,281	$ (1,897)	$ 1,384	$ (866)	$ 1,373	$ 39

	Gains/(losses) recorded in income			Income statement impact of excluded components[e]		OCI impact
Year ended December 31, 2018 (in millions)	Derivatives	Hedged items	Income statement impact	Amortization approach	Changes in fair value	Derivatives - Gains/(losses) recorded in OCI[f]
Contract type						
Interest rate[a][b]	$ (1,145)	$ 1,782	$ 637	$ –	$ 623	$ –
Foreign exchange[c]	1,092	(616)	476	(566)	476	(140)
Commodity[d]	789	(754)	35	–	26	–
Total	$ 736	$ 412	$ 1,148	$ (566)	$ 1,125	$ (140)

(a) Primarily consists of hedges of the benchmark (e.g., London Interbank Offered Rate ("LIBOR")) interest rate risk of fixed-rate long-term debt and AFS securities. Gains and losses were recorded in net interest income.

(b) Excludes the amortization expense associated with the inception hedge accounting adjustment applied to the hedged item. This expense is recorded in net interest income and substantially offsets the income statement impact of the excluded components. Also excludes the accrual of interest on interest rate swaps and the related hedged items.

(c) Primarily consists of hedges of the foreign currency risk of long-term debt and AFS securities for changes in spot foreign currency rates. Gains and losses related to the derivatives and the hedged items due to changes in foreign currency rates and the income statement impact of excluded components were recorded primarily in principal transactions revenue and net interest income.

(d) Consists of overall fair value hedges of physical commodities inventories that are generally carried at the lower of cost or net realizable value (net realizable value approximates fair value). Gains and losses were recorded in principal transactions revenue.

(e) The assessment of hedge effectiveness excludes certain components of the changes in fair values of the derivatives and hedged items such as forward points on foreign exchange forward contracts, time values and cross-currency basis spreads. Excluded components may impact earnings either through amortization of the initial amount over the life of the derivative or through fair value changes recognized in the current period.

(f) Represents the change in value of amounts excluded from the assessment of effectiveness under the amortization approach, predominantly cross-currency basis spreads. The amount excluded at inception of the hedge is recognized in earnings over the life of the derivative.

As of December 31, 2020 and 2019, the following amounts were recorded on the Consolidated balance sheets related to certain cumulative fair value hedge basis adjustments that are expected to reverse through the income statement in future periods as an adjustment to yield.

December 31, 2020 (in millions)	Carrying amount of the hedged items[a][b]		Cumulative amount of fair value hedging adjustments included in the carrying amount of hedged items: Active hedging relationships	Discontinued hedging relationships[d][e]	Total
Assets					
Investment securities - AFS	$ 139,684	[c]	$ 3,572	$ 847	$ 4,419
Liabilities					
Long-term debt	$ 177,611		$ 3,194	$ 11,473	$ 14,667
Beneficial interests issued by consolidated VIEs	746		–	(3)	(3)

December 31, 2019 (in millions)	Carrying amount of the hedged items[a][b]		Cumulative amount of fair value hedging adjustments included in the carrying amount of hedged items: Active hedging relationships	Discontinued hedging relationships[d][e]	Total
Assets					
Investment securities - AFS	$ 125,860	[c]	$ 2,110	$ 278	$ 2,388
Liabilities					
Long-term debt	$ 157,545		$ 6,719	$ 161	$ 6,880
Beneficial interests issued by consolidated VIEs	2,365		–	(8)	(8)

(a) Excludes physical commodities with a carrying value of $11.5 billion and $6.5 billion at December 31, 2020 and 2019, respectively, to which the Firm applies fair value hedge accounting. As a result of the application of hedge accounting, these inventories are carried at fair value, thus recognizing unrealized gains and losses in current periods. Since the Firm exits these positions at fair value, there is no incremental impact to net income in future periods.

(b) Excludes hedged items where only foreign currency risk is the designated hedged risk, as basis adjustments related to foreign currency hedges will not reverse through the income statement in future periods. At December 31, 2020 and 2019, the carrying amount excluded for AFS securities is $14.5 billion and $14.9 billion, respectively, and for long-term debt is $6.6 billion and $2.8 billion, respectively.

(c) Carrying amount represents the amortized cost, net of allowance if applicable. Refer to Note 10 for additional information.

(d) Represents basis adjustments existing on the balance sheet date associated with hedged items that have been de-designated from qualifying fair value hedging relationships.

(e) Positive amounts related to assets represent cumulative fair value hedge basis adjustments that will reduce net interest income in future periods. Positive (negative) amounts related to liabilities represent cumulative fair value hedge basis adjustments that will increase (reduce) net interest income in future periods.

Cash flow hedge gains and losses

The following tables present derivative instruments, by contract type, used in cash flow hedge accounting relationships, and the pre-tax gains/(losses) recorded on such derivatives, for the years ended December 31, 2020, 2019 and 2018, respectively. The Firm includes the gains/(losses) on the hedging derivative in the same line item in the Consolidated statements of income as the change in cash flows on the related hedged item.

Year ended December 31, 2020 (in millions)	Derivatives gains/(losses) recorded in income and other comprehensive income/(loss)		
	Amounts reclassified from AOCI to income	Amounts recorded in OCI	Total change in OCI for period
Contract type			
Interest rate[(a)]	**$ 570**	**$ 3,582**	**$ 3,012**
Foreign exchange[(b)]	**–**	**41**	**41**
Total	**$ 570**	**$ 3,623**	**$ 3,053**

Year ended December 31, 2019 (in millions)	Derivatives gains/(losses) recorded in income and other comprehensive income/(loss)		
	Amounts reclassified from AOCI to income	Amounts recorded in OCI	Total change in OCI for period
Contract type			
Interest rate[(a)]	$ (28)	$ (3)	$ 25
Foreign exchange[(b)]	(75)	125	200
Total	$ (103)	$ 122	$ 225

Year ended December 31, 2018 (in millions)	Derivatives gains/(losses) recorded in income and other comprehensive income/(loss)		
	Amounts reclassified from AOCI to income	Amounts recorded in OCI	Total change in OCI for period
Contract type			
Interest rate[(a)]	$ 44	$ (44)	$ (88)
Foreign exchange[(b)]	(26)	(201)	(175)
Total	$ 18	$ (245)	$ (263)

(a) Primarily consists of hedges of LIBOR-indexed floating-rate assets and floating-rate liabilities. Gains and losses were recorded in net interest income.

(b) Primarily consists of hedges of the foreign currency risk of non-U.S. dollar-denominated revenue and expense. The income statement classification of gains and losses follows the hedged item – primarily noninterest revenue and compensation expense.

The Firm did not experience any forecasted transactions that failed to occur for the years ended 2020, 2019 and 2018.

Over the next 12 months, the Firm expects that approximately $818 million (after-tax) of net gains recorded in AOCI at December 31, 2020, related to cash flow hedges will be recognized in income. For cash flow hedges that have been terminated, the maximum length of time over which the derivative results recorded in AOCI will be recognized in earnings is approximately nine years, corresponding to the timing of the originally hedged forecasted cash flows. For open cash flow hedges, the maximum length of time over which forecasted transactions are hedged is approximately seven years. The Firm's longer-dated forecasted transactions relate to core lending and borrowing activities.

Net investment hedge gains and losses

The following table presents hedging instruments, by contract type, that were used in net investment hedge accounting relationships, and the pre-tax gains/(losses) recorded on such instruments for the years ended December 31, 2020, 2019 and 2018.

Year ended December 31, (in millions)	**2020**		2019		2018	
	Amounts recorded in income[(a)(b)]	Amounts recorded in OCI	Amounts recorded in income[(a)(b)]	Amounts recorded in OCI	Amounts recorded in income[(a)(b)]	Amounts recorded in OCI
Foreign exchange derivatives	**$(122)**	**$(1,408)**	$72	$64	$11	$1,219

(a) Certain components of hedging derivatives are permitted to be excluded from the assessment of hedge effectiveness, such as forward points on foreign exchange forward contracts. The Firm elects to record changes in fair value of these amounts directly in other income.

(b) Excludes amounts reclassified from AOCI to income on the sale or liquidation of hedged entities. The Firm reclassified net pre-tax gains/(losses) of $3 million and $18 million to other income, and $(17) million to other expense related to the liquidation of certain legal entities during the years ended December 31, 2020, 2019 and 2018, respectively. Refer to Note 24 for further information.

Gains and losses on derivatives used for specified risk management purposes

The following table presents pre-tax gains/(losses) recorded on a limited number of derivatives, not designated in hedge accounting relationships, that are used to manage risks associated with certain specified assets and liabilities, including certain risks arising from mortgage commitments, warehouse loans, MSRs, wholesale lending exposures, and foreign currency denominated assets and liabilities.

Year ended December 31, (in millions)	Derivatives gains/(losses) recorded in income		
	2020	2019	2018
Contract type			
Interest rate[(a)]	**$ 2,994**	$ 1,491	$ 79
Credit[(b)]	**(176)**	(30)	(21)
Foreign exchange[(c)]	**43**	(5)	117
Total	**$ 2,861**	$ 1,456	$ 175

(a) Primarily represents interest rate derivatives used to hedge the interest rate risk inherent in mortgage commitments, warehouse loans and MSRs, as well as written commitments to originate warehouse loans. Gains and losses were recorded predominantly in mortgage fees and related income.

(b) Relates to credit derivatives used to mitigate credit risk associated with lending exposures in the Firm's wholesale businesses. These derivatives do not include credit derivatives used to mitigate counterparty credit risk arising from derivative receivables, which is included in gains and losses on derivatives related to market-making activities and other derivatives. Gains and losses were recorded in principal transactions revenue.

(c) Primarily relates to derivatives used to mitigate foreign exchange risk of specified foreign currency-denominated assets and liabilities. Gains and losses were recorded in principal transactions revenue.

Gains and losses on derivatives related to market-making activities and other derivatives

The Firm makes markets in derivatives in order to meet the needs of customers and uses derivatives to manage certain risks associated with net open risk positions from its market-making activities, including the counterparty credit risk arising from derivative receivables. All derivatives not included in the hedge accounting or specified risk management categories above are included in this category. Gains and losses on these derivatives are primarily recorded in principal transactions revenue. Refer to Note 6 for information on principal transactions revenue.

Credit derivatives

Credit derivatives are financial instruments whose value is derived from the credit risk associated with the debt of a third-party issuer (the reference entity) and which allow one party (the protection purchaser) to transfer that risk to another party (the protection seller). Credit derivatives expose the protection purchaser to the creditworthiness of the protection seller, as the protection seller is required to make payments under the contract when the reference entity experiences a credit event, such as a bankruptcy, a failure to pay its obligation or a restructuring. The seller of credit protection receives a premium for providing protection but has the risk that the underlying instrument referenced in the contract will be subject to a credit event.

The Firm is both a purchaser and seller of protection in the credit derivatives market and uses these derivatives for two primary purposes. First, in its capacity as a market-maker, the Firm actively manages a portfolio of credit derivatives by purchasing and selling credit protection, predominantly on corporate debt obligations, to meet the needs of customers. Second, as an end-user, the Firm uses credit derivatives to manage credit risk associated with lending exposures (loans and unfunded commitments) and derivatives counterparty exposures in the Firm's wholesale businesses, and to manage the credit risk arising from certain financial instruments in the Firm's market-making businesses. Following is a summary of various types of credit derivatives.

Credit default swaps

Credit derivatives may reference the credit of either a single reference entity ("single-name") or a broad-based index. The Firm purchases and sells protection on both single-name and index-reference obligations. Single-name CDS and index CDS contracts are either OTC or OTC-cleared derivative contracts. Single-name CDS are used to manage the default risk of a single reference entity, while index CDS contracts are used to manage the credit risk associated with the broader credit markets or credit market segments. Like the S&P 500 and other market indices, a CDS index consists of a portfolio of CDS across many reference entities. New series of CDS indices are periodically established with a new underlying portfolio of reference entities to reflect changes in the credit markets. If one of the reference entities in the index experiences a credit event, then the reference entity that defaulted is removed from the index. CDS can also be referenced against specific portfolios of reference names or against customized exposure levels based on specific client demands: for example, to provide protection against the first $1 million of realized credit losses in a $10 million portfolio of exposure. Such structures are commonly known as tranche CDS.

For both single-name CDS contracts and index CDS contracts, upon the occurrence of a credit event, under the terms of a CDS contract neither party to the CDS contract has recourse to the reference entity. The protection purchaser has recourse to the protection seller for the difference between the face value of the CDS contract and the fair value of the reference obligation at settlement of the credit derivative contract, also known as the recovery value. The protection purchaser does not need to hold the debt instrument of the underlying reference entity in order to receive amounts due under the CDS contract when a credit event occurs.

Credit-related notes

A credit-related note is a funded credit derivative where the issuer of the credit-related note purchases from the note investor credit protection on a reference entity or an index. Under the contract, the investor pays the issuer the par value of the note at the inception of the transaction, and in return, the issuer pays periodic payments to the investor, based on the credit risk of the referenced entity. The issuer also repays the investor the par value of the note at maturity unless the reference entity (or one of the entities that makes up a reference index) experiences a specified credit event. If a credit event occurs, the issuer is not obligated to repay the par value of the note, but rather, the issuer pays the investor the difference between the par value of the note and the fair value of the defaulted reference obligation at the time of settlement. Neither party to the credit-related note has recourse to the defaulting reference entity.

The following tables present a summary of the notional amounts of credit derivatives and credit-related notes the Firm sold and purchased as of December 31, 2020 and 2019. Upon a credit event, the Firm as a seller of protection would typically pay out only a percentage of the full notional amount of net protection sold, as the amount actually required to be paid on the contracts takes into account the recovery value of the reference obligation at the time of settlement. The Firm manages the credit risk on contracts to sell protection by purchasing protection with identical or similar underlying reference entities. Other purchased protection referenced in the following tables includes credit derivatives bought on related, but not identical, reference positions (including indices, portfolio coverage and other reference points) as well as protection purchased through credit-related notes.

The Firm does not use notional amounts of credit derivatives as the primary measure of risk management for such derivatives, because the notional amount does not take into account the probability of the occurrence of a credit event, the recovery value of the reference obligation, or related cash instruments and economic hedges, each of which reduces, in the Firm's view, the risks associated with such derivatives.

Total credit derivatives and credit-related notes

	Maximum payout/Notional amount			
December 31, 2020 (in millions)	Protection sold	Protection purchased with identical underlyings[(b)]	Net protection (sold)/ purchased[(c)]	Other protection purchased[(d)]
Credit derivatives				
Credit default swaps	**$ (535,094)**	**$ 554,565**	**$ 19,471**	**$ 4,001**
Other credit derivatives[(a)]	**(40,084)**	**57,344**	**17,260**	**9,415**
Total credit derivatives	**(575,178)**	**611,909**	**36,731**	**13,416**
Credit-related notes	**–**	**–**	**–**	**10,248**
Total	**$ (575,178)**	**$ 611,909**	**$ 36,731**	**$ 23,664**

	Maximum payout/Notional amount			
December 31, 2019 (in millions)	Protection sold	Protection purchased with identical underlyings[(b)]	Net protection (sold)/ purchased[(c)]	Other protection purchased[(d)]
Credit derivatives				
Credit default swaps	$ (562,338)	$ 571,892	$ 9,554	$ 3,936
Other credit derivatives[(a)]	(50,395) [(e)]	46,541 [(e)]	(3,854)	7,364
Total credit derivatives	(612,733)	618,433	5,700	11,300
Credit-related notes	–	–	–	9,606
Total	$ (612,733)	$ 618,433	$ 5,700	$ 20,906

(a) Other credit derivatives predominantly consist of credit swap options and total return swaps.
(b) Represents the total notional amount of protection purchased where the underlying reference instrument is identical to the reference instrument on protection sold; the notional amount of protection purchased for each individual identical underlying reference instrument may be greater or lower than the notional amount of protection sold.
(c) Does not take into account the fair value of the reference obligation at the time of settlement, which would generally reduce the amount the seller of protection pays to the buyer of protection in determining settlement value.
(d) Represents protection purchased by the Firm on referenced instruments (single-name, portfolio or index) where the Firm has not sold any protection on the identical reference instrument.
(e) Prior-period amounts have been revised to conform with the current presentation.

The following tables summarize the notional amounts by the ratings, maturity profile, and total fair value, of credit derivatives and credit-related notes as of December 31, 2020 and 2019, where JPMorgan Chase is the seller of protection. The maturity profile is based on the remaining contractual maturity of the credit derivative contracts. The ratings profile is based on the rating of the reference entity on which the credit derivative contract is based. The ratings and maturity profile of credit derivatives and credit-related notes where JPMorgan Chase is the purchaser of protection are comparable to the profile reflected below.

Protection sold – credit derivatives and credit-related notes ratings[(a)]/maturity profile

December 31, 2020 (in millions)	<1 year	1–5 years	>5 years	Total notional amount	Fair value of receivables[(b)]	Fair value of payables[(b)]	Net fair value
Risk rating of reference entity							
Investment-grade	**$ (93,905)**	**$ (307,648)**	**$ (35,326)**	**$ (436,879)**	**$ 5,521**	**$ (835)**	**$ 4,686**
Noninvestment-grade	**(31,809)**	**(97,337)**	**(9,153)**	**(138,299)**	**3,953**	**(2,542)**	**1,411**
Total	**$ (125,714)**	**$ (404,985)**	**$ (44,479)**	**$ (575,178)**	**$ 9,474**	**$ (3,377)**	**$ 6,097**

December 31, 2019 (in millions)	<1 year[(c)]	1–5 years	>5 years	Total notional amount	Fair value of receivables[(b)(c)]	Fair value of payables[(b)(c)]	Net fair value
Risk rating of reference entity							
Investment-grade	$ (119,788)	$ (311,407)	$ (42,129)	$ (473,324)	$ 6,168	$ (901)	$ 5,267
Noninvestment-grade	(41,799)	(87,769)	(9,841)	(139,409)	4,287	(2,817)	1,470
Total	$ (161,587)	$ (399,176)	$ (51,970)	$ (612,733)	$ 10,455	$ (3,718)	$ 6,737

(a) The ratings scale is primarily based on external credit ratings defined by S&P and Moody's.
(b) Amounts are shown on a gross basis, before the benefit of legally enforceable master netting agreements including cash collateral netting.
(c) Prior-period amounts have been revised to conform with the current presentation.

Note 6 – Noninterest revenue and noninterest expense

Noninterest revenue

The Firm records noninterest revenue from certain contracts with customers in investment banking fees, deposit-related fees, asset management, administration, and commissions, and components of card income. The related contracts are often terminable on demand and the Firm has no remaining obligation to deliver future services. For arrangements with a fixed term, the Firm may commit to deliver services in the future. Revenue associated with these remaining performance obligations typically depends on the occurrence of future events or underlying asset values, and is not recognized until the outcome of those events or values are known.

Investment banking fees

This revenue category includes debt and equity underwriting and advisory fees. As an underwriter, the Firm helps clients raise capital via public offering and private placement of various types of debt and equity instruments. Underwriting fees are primarily based on the issuance price and quantity of the underlying instruments, and are recognized as revenue typically upon execution of the client's transaction. The Firm also manages and syndicates loan arrangements. Credit arrangement and syndication fees, included within debt underwriting fees, are recorded as revenue after satisfying certain retention, timing and yield criteria.

The Firm also provides advisory services, by assisting its clients with mergers and acquisitions, divestitures, restructuring and other complex transactions. Advisory fees are recognized as revenue typically upon execution of the client's transaction.

The following table presents the components of investment banking fees.

Year ended December 31, (in millions)	2020	2019	2018
Underwriting			
Equity	**$ 2,759**	$ 1,648	$ 1,684
Debt	**4,362**	3,513	3,347
Total underwriting	**7,121**	5,161	5,031
Advisory	**2,365**	2,340	2,519
Total investment banking fees	**$ 9,486**	$ 7,501	$ 7,550

Investment banking fees are earned primarily by CIB. Refer to Note 32 for segment results.

Principal transactions

Principal transactions revenue is driven by many factors, including:

- the bid-offer spread, which is the difference between the price at which a market participant is willing and able to sell an instrument to the Firm and the price at which another market participant is willing and able to buy it from the Firm, and vice versa; and
- realized and unrealized gains and losses on financial instruments and commodities transactions, including those accounted for under the fair value option, primarily used in client-driven market-making activities, and on private equity investments.
  - Realized gains and losses result from the sale of instruments, closing out or termination of transactions, or interim cash payments.
  - Unrealized gains and losses result from changes in valuation.

In connection with its client-driven market-making activities, the Firm transacts in debt and equity instruments, derivatives and commodities, including physical commodities inventories and financial instruments that reference commodities.

Principal transactions revenue also includes realized and unrealized gains and losses related to:

- derivatives designated in qualifying hedge accounting relationships, primarily fair value hedges of commodity and foreign exchange risk;
- derivatives used for specific risk management purposes, primarily to mitigate credit risk and foreign exchange risk.

Refer to Note 5 for further information on the income statement classification of gains and losses from derivatives activities.

In the financial commodity markets, the Firm transacts in OTC derivatives (e.g., swaps, forwards, options) and ETD that reference a wide range of underlying commodities. In the physical commodity markets, the Firm primarily purchases and sells precious and base metals and may hold other commodities inventories under financing and other arrangements with clients.

The following table presents all realized and unrealized gains and losses recorded in principal transactions revenue. This table excludes interest income and interest expense on trading assets and liabilities, which are an integral part of the overall performance of the Firm's client-driven market-making activities in CIB and cash deployment activities in Treasury and CIO. Refer to Note 7 for further information on interest income and interest expense.

Trading revenue is presented primarily by instrument type. The Firm's client-driven market-making businesses generally utilize a variety of instrument types in connection with their market-making and related risk-management activities; accordingly, the trading revenue presented in the table below is not representative of the total revenue of any individual LOB.

Year ended December 31, (in millions)	2020	2019		2018	
Trading revenue by instrument type					
Interest rate[a]	**$ 2,575**	$ 2,739	(c)	$ 1,844	(c)
Credit[b]	**2,753**	1,628	(c)	1,625	(c)
Foreign exchange	**4,253**	3,179	(c)	3,222	(c)
Equity	**6,171**	5,589	(c)	4,822	(c)
Commodity	**2,088**	1,133	(c)	895	(c)
Total trading revenue	**17,840**	14,268		12,408	
Private equity gains/(losses)	**181**	(250)		(349)	
Principal transactions	**$ 18,021**	$ 14,018		$ 12,059	

(a) Includes the impact of changes in funding valuation adjustments on derivatives.
(b) Includes the impact of changes in credit valuation adjustments on derivatives, net of the associated hedging activities.
(c) The prior-period amounts have been revised to conform with the current presentation.

Principal transactions revenue is earned primarily by CIB. Refer to Note 32 for segment results.

Lending- and deposit-related fees

Lending-related fees include fees earned from loan commitments, standby letters of credit, financial guarantees, and other loan-servicing activities. Deposit-related fees include fees earned from providing overdraft and other deposit account services, and from performing cash management activities. Lending- and deposit-related fees in this revenue category are recognized over the period in which the related service is provided.

The following table presents the components of lending- and deposit-related fees.

Year ended December 31, (in millions)	2020	2019	2018
Lending-related fees	**$ 1,271**	$ 1,184	$ 1,117
Deposit-related fees[a]	**5,240**	5,442	5,260
Total lending- and deposit-related fees	**$ 6,511**	$ 6,626	$ 6,377

(a) In the first quarter of 2020, the Firm reclassified certain fees from asset management, administration and commissions to lending- and deposit-related fees. Prior-period amounts have been revised to conform with the current presentation.

Lending- and deposit-related fees are earned by CCB, CIB, CB, and AWM. Refer to Note 32 for segment results.

Asset management, administration and commissions

This revenue category includes fees from investment management and related services, custody, brokerage services and other products. The Firm manages assets on behalf of its clients, including investors in Firm-sponsored funds and owners of separately managed investment accounts. Management fees are typically based on the value of assets under management and are collected and recognized at the end of each period over which the management services are provided and the value of the managed assets is known. The Firm also receives performance-based management fees, which are earned based on exceeding certain benchmarks or other performance targets and are accrued and recognized when the probability of reversal is remote, typically at the end of the related billing period. The Firm has contractual arrangements with third parties to provide distribution and other services in connection with its asset management activities. Amounts paid to these third-party service providers are generally recorded in professional and outside services expense.

The following table presents the components of Firmwide asset management, administration and commissions.

Year ended December 31, (in millions)	2020	2019	2018
Asset management fees			
Investment management fees[a]	**$ 11,694**	$ 10,865	$ 10,768
All other asset management fees[b]	**338**	315	270
Total asset management fees	**12,032**	11,180	11,038
Total administration fees[c]	**2,249**	2,197	2,179
Commissions and other fees			
Brokerage commissions[d]	**2,959**	2,439	2,505
All other commissions and fees[e]	**937**	1,092	1,071
Total commissions and fees	**3,896**	3,531	3,576
Total asset management, administration and commissions	**$ 18,177**	$ 16,908	$ 16,793

(a) Represents fees earned from managing assets on behalf of the Firm's clients, including investors in Firm-sponsored funds and owners of separately managed investment accounts.
(b) Represents fees for services that are ancillary to investment management services, such as commissions earned on the sales or distribution of mutual funds to clients. These fees are recorded as revenue at the time the service is rendered or, in the case of certain distribution fees based on the underlying fund's asset value and/or investor redemption, recorded over time as the investor remains in the fund or upon investor redemption.
(c) Predominantly includes fees for custody, securities lending, funds services and securities clearance. These fees are recorded as revenue over the period in which the related service is provided.
(d) Represents commissions earned when the Firm acts as a broker, by facilitating its clients' purchases and sales of securities and other financial instruments. Brokerage commissions are collected and recognized as revenue upon occurrence of the client transaction. The Firm reports certain costs paid to third-party clearing houses and exchanges net against commission revenue.
(e) In the first quarter of 2020, the Firm reclassified certain fees from asset management, administration and commissions to lending- and deposit-related fees. Prior-period amounts have been revised to conform with the current presentation.

Asset management, administration and commissions are earned primarily by AWM, CIB and CCB. Refer to Note 32 for segment results.

Mortgage fees and related income

This revenue category reflects CCB's Home Lending net production and net mortgage servicing revenue.

Net production revenue includes fees and income recognized as earned on mortgage loans originated with the intent to sell, and the impact of risk management activities associated with the mortgage pipeline and warehouse loans. Net production revenue also includes gains and losses on sales and lower of cost or fair value adjustments on mortgage loans held-for-sale (excluding certain repurchased loans insured by U.S. government agencies), and changes in the fair value of financial instruments measured under the fair value option. Net mortgage servicing revenue includes operating revenue earned from servicing third-party mortgage loans, which is recognized over the period in which the service is provided; changes in the fair value of MSRs; the impact of risk management activities associated with MSRs; and gains and losses on securitization of excess mortgage servicing. Net mortgage servicing revenue also includes gains and losses on sales and lower of cost or fair value adjustments of certain repurchased loans insured by U.S. government agencies.

Refer to Note 15 for further information on risk management activities and MSRs.

Net interest income from mortgage loans is recorded in interest income.

Card income

This revenue category includes interchange and other income from credit and debit card transactions; and fees earned from processing card transactions for merchants, both of which are recognized when purchases are made by a cardholder and presented net of certain transaction-related costs. Card income also includes account origination costs and annual fees, which are deferred and recognized on a straight-line basis over a 12-month period.

Certain credit card products offer the cardholder the ability to earn points based on account activity, which the cardholder can choose to redeem for cash and non-cash rewards. The cost to the Firm related to these proprietary rewards programs varies based on multiple factors including the terms and conditions of the rewards programs, cardholder activity, cardholder reward redemption rates and cardholder reward selections. The Firm maintains a liability for its obligations under its rewards programs and reports the current-period cost as a reduction of card income.

Credit card revenue sharing agreements

The Firm has contractual agreements with numerous co-brand partners that grant the Firm exclusive rights to issue co-branded credit card products and market them to the customers of such partners. These partners endorse the co-brand credit card programs and provide their customer or member lists to the Firm. The partners may also conduct marketing activities and provide rewards redeemable under their own loyalty programs that the Firm will grant to co-brand credit cardholders based on account activity. The terms of these agreements generally range from five to ten years.

The Firm typically makes payments to the co-brand credit card partners based on the cost of partners' marketing activities and loyalty program rewards provided to credit cardholders, new account originations and sales volumes. Payments to partners based on marketing efforts undertaken by the partners are expensed by the Firm as incurred and reported as marketing expense. Payments for partner loyalty program rewards are reported as a reduction of card income when incurred. Payments to partners based on new credit card account originations are accounted for as direct loan origination costs and are deferred and recognized as a reduction of card income on a straight-line basis over a 12-month period. Payments to partners based on sales volumes are reported as a reduction of card income when the related interchange income is earned.

The following table presents the components of card income:

Year ended December 31, (in millions)	**2020**	2019	2018
Interchange and merchant processing income	**$ 18,563**	$ 20,370	$ 18,808
Reward costs and partner payments[(a)]	**(13,637)**	(14,540)	(13,320) [(c)]
Other card income[(b)]	**(491)**	(754)	(745)
Total card income	**$ 4,435**	$ 5,076	$ 4,743

(a) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.

(b) Predominantly represents the amortization of account origination costs and annual fees, which are deferred and recognized on a straight-line basis over a 12-month period.

(c) Includes an adjustment to the credit card rewards liability of approximately $330 million, recorded in the second quarter of 2018.

Card income is earned primarily by CCB, CIB and CB. Refer to Note 32 for segment results.

Refer to Note 18 for information on operating lease income included within other income.

Noninterest expense

Other expense

Other expense on the Firm's Consolidated statements of income included the following:

Year ended December 31, (in millions)	**2020**	2019	2018
Legal expense/(benefit)	**$ 1,115**	$ 239	$ 72
FDIC-related expense	**717**	457	1,239

Note 7 – Interest income and Interest expense

Interest income and interest expense are recorded in the Consolidated statements of income and classified based on the nature of the underlying asset or liability.

The following table presents the components of interest income and interest expense:

Year ended December 31, (in millions)	2020	2019	2018
Interest income			
Loans[a][b]	$ 43,758	$ 51,855	$ 49,032
Taxable securities	7,843	7,962	5,653
Non-taxable securities[c]	1,184	1,329	1,595
Total investment securities[a]	9,027	9,291	7,248
Trading assets - debt instruments[b]	7,832	9,141	7,146
Federal funds sold and securities purchased under resale agreements	2,436	6,146	3,819
Securities borrowed[d]	(302)	1,574	913
Deposits with banks	749	3,887	5,907
All other interest-earning assets[b][e]	1,023	2,146	2,035
Total interest income	$ 64,523	$ 84,040	$ 76,100
Interest expense			
Interest bearing deposits	$ 2,357	$ 8,957	$ 5,973
Federal funds purchased and securities loaned or sold under repurchase agreements	1,058	4,630	3,066
Short-term borrowings[f]	372	1,248	1,144
Trading liabilities - debt and all other interest-bearing liabilities[d][g]	195	2,585	2,387
Long-term debt	5,764	8,807	7,978
Beneficial interest issued by consolidated VIEs	214	568	493
Total interest expense	$ 9,960	$ 26,795	$ 21,041
Net interest income	$ 54,563	$ 57,245	$ 55,059
Provision for credit losses	17,480	5,585	4,871
Net interest income after provision for credit losses	$ 37,083	$ 51,660	$ 50,188

(a) Includes the amortization/accretion of unearned income (e.g., purchase premiums/discounts, net deferred fees/costs, and others).
(b) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.
(c) Represents securities that are tax-exempt for U.S. federal income tax purposes.
(d) Negative interest income is related to the impact of current interest rates combined with the fees paid on client-driven securities borrowed balances. The negative interest expense related to prime brokerage customer payables is recognized in interest expense and reported within trading liabilities - debt and all other interest-bearing liabilities.
(e) Includes interest earned on brokerage-related held-for-investment customer receivables, which are classified in accrued interest and accounts receivable, and all other interest-earning assets, which are classified in other assets on the Consolidated balance sheets.
(f) Includes commercial paper.
(g) All other interest-bearing liabilities includes interest expense on brokerage-related customer payables.

Interest income and interest expense includes the current-period interest accruals for financial instruments measured at fair value, except for derivatives and financial instruments containing embedded derivatives that would be separately accounted for in accordance with U.S. GAAP, absent the fair value option election; for those instruments, all changes in fair value including any interest elements, are reported in principal transactions revenue. For financial instruments that are not measured at fair value, the related interest is included within interest income or interest expense, as applicable. Refer to Notes 12, 10, 11 and 20, for further information on accounting for interest income and interest expense related to loans, investment securities, securities financing activities (i.e., securities purchased or sold under resale or repurchase agreements; securities borrowed; and securities loaned) and long-term debt, respectively.

Note 8 – Pension and other postretirement employee benefit plans

The Firm has various defined benefit pension plans and OPEB plans that provide benefits to its employees in the U.S. and certain non-U.S. locations. The Firm also provides a qualified defined contribution plan in the U.S. and maintains other similar arrangements in certain non-U.S. locations.

The principal defined benefit pension plan in the U.S. is a qualified noncontributory plan that provides benefits to substantially all U.S. employees who were hired prior to December 2, 2017. The Firm has frozen the U.S. defined benefit pension plan (the "Plan Freeze"). Effective as of January 1, 2020 (and January 1, 2019 for new hires), new pay credits have been directed to the U.S. defined contribution plan. Interest credits will continue to accrue on the U.S. defined benefit pension plan. As a result of the Plan Freeze, a curtailment was triggered and a remeasurement of the U.S. defined benefit pension obligation and plan assets occurred as of November 30, 2018. The plan design change did not have a material impact on the U.S. defined benefit pension plan or the Firm's Consolidated Financial Statements.

The Firm also has defined benefit pension plans that are offered in certain non-U.S. locations based on factors such as eligible compensation, age and/or years of service. It is the Firm's policy to fund the pension plans in amounts sufficient to meet the requirements under applicable laws. The Firm does not anticipate at this time making any contribution to the U.S. defined benefit pension plan in 2021. The 2021 contributions to the non-U.S. defined benefit pension plans are expected to be $50 million, of which $35 million are contractually required.

The Firm also has a number of nonqualified noncontributory defined benefit pension plans that are unfunded. These plans provide supplemental defined pension benefits to certain employees.

The Firm offers postretirement medical and life insurance benefits to certain U.S. retirees and postretirement medical benefits to certain qualifying U.S. and U.K. employees.

The Firm partially defrays the cost of its U.S. OPEB obligation through corporate-owned life insurance ("COLI") purchased on the lives of eligible employees and retirees. While the Firm owns the COLI policies, certain COLI proceeds (death benefits, withdrawals and other distributions) may be used only to reimburse the Firm for its net postretirement benefit claim payments and related administrative expense. The Firm has prefunded its U.S. postretirement benefit obligations. The U.K. OPEB plan is unfunded.

Pension and OPEB accounting guidance generally requires that the difference between plan assets at fair value and the benefit obligation be measured and recorded on the balance sheet. Plans that are overfunded (excess of plan assets over benefit obligation) are recorded in other assets and plans that are underfunded (excess benefit obligation over plan assets) are recorded in other liabilities. Gains or losses resulting from changes in the benefit obligation and the fair value of plan assets are recorded in OCI and recognized as part of the net periodic benefit cost over subsequent periods as discussed in the Gains and losses section of this Note. Additionally, benefits earned during the year are reported in compensation expense; all other components of net periodic defined benefit costs are reported in other expense in the Consolidated statements of income.

The following table presents the pretax changes in benefit obligations, plan assets, the net funded status, and the amounts recorded in AOCI on the Consolidated balance sheets for the Firm's defined benefit pension and OPEB plans.

As of or for the year ended December 31, (in millions)	Defined benefit pension and OPEB plans 2020	2019
Change in projected and accumulated benefit obligations, U.S. defined benefit pension plans		
Benefit obligation, beginning of year	**$ (13,277)**	$ (12,173)
Benefits earned during the year	**(2)**	(327)
Interest cost on benefit obligations	**(422)**	(518)
Plan amendments	**—**	(5)
Net gain/(loss)	**(1,086)**	(944)
Benefits paid	**640**	690
Benefit obligations, end of year, U.S. defined benefit pension plans	**$ (14,147)**	$ (13,277)
Benefit obligations, other defined benefit pension and OPEB plans	**(4,990)**	(4,428)
Benefit obligations, end of year	**$ (19,137)**	$ (17,705)
Change in plan assets, U.S. defined benefit pension plans		
Fair value of plan assets, beginning of year	**$ 16,329**	$ 14,521
Actual return on plan assets	**1,901**	2,465
Firm contributions	**29**	33
Benefits paid	**(640)**	(690)
Fair value of plan assets, end of year, U.S. defined benefit pension plans	**$ 17,619**	$ 16,329
Fair value of plan assets, other defined benefit pension and OPEB plans	**7,798**	7,037
Fair value of plan assets, end of year	**$ 25,417**	$ 23,366
Net funded status, U.S. defined benefit pension plans	**$ 3,472**	$ 3,052
Net funded status, other defined benefit pension and OPEB plans	**2,808**	2,609
Net funded status	**$ 6,280**	$ 5,661
Amounts recorded in accumulated other comprehensive income/(loss), U.S. defined benefit pension plans		
Net gain/(loss), U.S. defined benefit pension plans	**$ (1,558)**	$ (1,745)
Prior service credit/(cost), U.S. defined benefit pension plans	**(4)**	(5)
Accumulated other comprehensive income/(loss), end of year, U.S. defined benefit pension plans	**$ (1,562)**	$ (1,750)
Accumulated other comprehensive income/(loss), other defined benefit pension and OPEB plans	**(24)**	(66)
Accumulated other comprehensive income/(loss)	**$ (1,586)**	$ (1,816)

The following table presents the weighted-average actuarial assumptions used to value the benefit obligations for the U.S. defined benefit pension plans.

As of December 31,	U.S. defined benefit pension plans 2020	2019
Discount rate	**2.50%**	3.30%
Rate of compensation increase	**NA**	NA
Interest crediting rate	**4.65**	4.65

Gains and losses

For the Firm's defined benefit pension plans, fair value is used to determine the expected return on plan assets. Amortization of net gains and losses is included in annual net periodic benefit cost if, as of the beginning of the year, the net gain or loss exceeds 10% of the greater of the projected benefit obligation or the fair value of the plan assets. Any excess is amortized over the average expected remaining lifetime of plan participants, which for the U.S. defined benefit pension plans is currently 37 years and for the non-U.S. defined benefit pension plans is the period appropriate for the affected plan. For the years ended December 31, 2020 and 2019, the net gain was primarily attributable to a market-driven increase in the fair value of plan assets, predominantly offset by a decrease in the discount rate.

The following table presents the components of net periodic benefit costs reported in the Consolidated statements of income for the Firm's defined benefit pension, defined contribution and OPEB plans, and in other comprehensive income for the defined benefit pension and OPEB plans.

	Pension and OPEB plans		
Year ended December 31, (in millions)	**2020**	2019	2018
Components of net periodic benefit cost, U.S. defined benefit pension plans			
Benefits earned during the year	**$ 2**	$ 327	$ 323
Interest cost on benefit obligations	**422**	518	478
Expected return on plan assets	**(634)**	(776)	(836)
Amortization:			
Net (gain)/loss	**6**	147	80
Prior service (credit)/cost	**–**	–	(21)
Curtailment (gain)/loss	**–**	–	21
Net periodic defined benefit plan cost/(credit), U.S. defined benefit pension plans	**$ (204)**	$ 216	$ 45
Other defined benefit pension and OPEB plans	**(81)**	(72)	(72)
Total net periodic defined benefit plan cost/(credit)	**$ (285)**	$ 144	$ (27)
Total defined contribution plans	**1,332**	952	872
Total pension and OPEB cost included in noninterest expense	**$ 1,047**	$ 1,096	$ 845
Changes recognized in other comprehensive income, U.S. defined benefit pension plans			
Prior service (credit)/cost arising during the year	**–**	5	–
Net (gain)/loss arising during the year	**(181)**	(745)	453
Amortization of net (loss)/gain	**(6)**	(147)	(80)
Amortization of prior service (cost)/credit	**–**	–	21
Curtailment (loss)/gain	**–**	–	(21)
Total recognized in other comprehensive income, U.S. defined benefit pension plans	**$ (187)**	$ (887)	$ 373
Other defined benefit pension and OPEB plans	**(27)**	(270)	77
Total recognized in other comprehensive income	**$ (214)**	$ (1,157)	$ 450
Total recognized in net periodic defined benefit plan cost/(credit) and other comprehensive income	**$ (499)**	$ (1,013)	$ 423

The following table presents the weighted-average actuarial assumptions used to determine the net periodic benefit costs for the U.S. defined benefit pension plans.

	U.S. defined benefit pension plans		
Year ended December 31, (in millions)	**2020**	2019	2018
Discount rate	**3.30%**	4.30%	3.70 / 4.50%
Expected long-term rate of return on plan assets	**4.00**	5.50	5.50
Rate of compensation increase	**NA**	2.30	2.30
Interest crediting rate	**4.65**	4.90	4.90

Plan assumptions

The Firm's expected long-term rate of return for defined benefit pension plan assets is a blended weighted average, by asset allocation of the projected long-term returns for the various asset classes, taking into consideration local market conditions and the specific allocation of plan assets. Returns on asset classes are developed using a forward-looking approach and are not strictly based on historical returns. Consideration is also given to current market conditions and the portfolio mix of each plan.

The discount rate used in determining the benefit obligation under the U.S. defined benefit pension plan was provided by the Firm's actuaries. This rate was selected by reference to the yields on portfolios of bonds with maturity dates and coupons that closely match each of the plan's projected cash flows.

At December 31, 2020, the Firm decreased the discount rates used to determine its benefit obligations for the U.S. defined benefit pension plans in light of current market interest rates, which is expected to decrease expense by approximately $64 million in 2021. The 2021 expected long-term rate of return on U.S. defined benefit pension plan assets is 3.00%.

The following table represents the effect of a 25-basis point decline in the expected long-term rate of return of 3.00% and discount rate of 2.50%.

Effect on U.S. defined benefit pension plans		
(in millions)	Pension expense	Benefit obligation
Expected long-term rate of return	$ 43	NA
Discount rate	(20)	404

Investment strategy and asset allocation

The assets of the Firm's defined benefit pension plans are held in various trusts and are invested in well-diversified portfolios of equity and fixed income securities, cash and cash equivalents, and alternative investments. The trust-owned assets of the Firm's U.S. OPEB plan are invested primarily in fixed income securities. COLI policies used to partially defray the cost of the Firm's U.S. OPEB plan are invested in separate accounts of an insurance company and are allocated to investments intended to replicate equity and fixed income indices.

The investment policies for the assets of the Firm's defined benefit pension plans are to optimize the risk-return relationship as appropriate to the needs and goals of each plan. Assets are managed by a combination of internal and external investment managers. The Firm regularly reviews the asset allocations and asset managers, as well as other factors that could impact the portfolios, which are rebalanced when deemed necessary.

Investments held by the Firm's defined benefit pension and OPEB plans include financial instruments which are exposed to various risks such as interest rate, market and credit risks. Exposure to a concentration of credit risk is mitigated by the broad diversification of both U.S. and non-U.S. investments. Additionally, the investments in each of the collective investment funds and/or registered investment companies are further diversified into various financial instruments. As of December 31, 2020, assets held by the Firm's defined benefit pension and OPEB plans do not include securities issued by JPMorgan Chase or its affiliates, except through indirect exposures through investments in ETFs, mutual funds and collective investment funds managed by third-parties. The defined benefit pension and OPEB plans hold investments that are sponsored or managed by affiliates of JPMorgan Chase in the amount of $2.7 billion and $3.1 billion, as of December 31, 2020 and 2019, respectively.

The following table presents the weighted-average asset allocation of the fair values of total plan assets at December 31 for the years indicated, as well as the respective approved asset allocation ranges by asset class.

	U.S. defined benefit pension plan[c]		
	Asset	% of plan assets	
December 31,	Allocation	**2020**	2019
Asset class			
Debt securities[a]	42-100%	**77 %**	74 %
Equity securities	0-40	**15**	16
Real estate	0-4	**1**	1
Alternatives[b]	0-15	**7**	9
Total	100 %	**100 %**	100 %

(a) Debt securities primarily includes cash and cash equivalents, corporate debt, U.S. federal, state, local and non-U.S. government, asset-backed and mortgage-backed securities.
(b) Alternatives primarily include limited partnerships.
(c) Represents the U.S. defined benefit pension plan only as it is the most significant plan. The other U.S. defined benefit pension plans are unfunded. The weighted-average asset allocation for the U.S. OPEB plan was 59% debt securities and 41% equity securities and 60% debt securities and 40% equity securities at December 31, 2020 and 2019, respectively.

Fair value measurement of the plans' assets and liabilities

Refer to Note 2 for information on fair value measurements, including descriptions of level 1, 2, and 3 of the fair value hierarchy and the valuation methods employed by the Firm.

Pension plan assets and liabilities measured at fair value

December 31, (in millions)	Defined benefit pension and OPEB plans							
	2020				2019			
	Level 1	Level 2	Level 3	Total fair value	Level 1	Level 2	Level 3	Total fair value
Equity securities	$ 2,353	$ –	$ 2	$ 2,355	$ 2,259	$ 3	$ 2	$ 2,264
Corporate debt securities	–	7,414	11	7,425	–	6,474	2	6,476
U.S. federal, state, local and non-U.S. government debt securities	1,395	360	–	1,755	1,616	401	–	2,017
Mortgage-backed securities	461	1,184	31	1,676	312	681	4	997
Other[(a)]	788	861	201	1,850	718	49	250	1,017
U.S. defined benefit pension plans[(b)]	$ 4,997	$ 9,819	$ 245	$ 15,061	$ 4,905	$ 7,608	$ 258	$ 12,771
Other defined benefit pension and OPEB plans[(c)]	2,034	2,565	2,707	7,306	1,834	2,307	2,431	6,572
Total assets measured at fair value	$ 7,031	$ 12,384	$ 2,952	$ 22,367	$ 6,739	$ 9,915	$ 2,689	$ 19,343

(a) Other consists primarily of mutual funds, money market funds and participating annuity contracts.
(b) At December 31, 2020 and 2019, excludes $3.2 billion and $3.9 billion, respectively, of certain investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient, and $606 million and $343 million, respectively, of net defined benefit pension plan payables, primarily for investments sold and purchased, which are not required to be classified in the fair value hierarchy. Investments in level 3 of the valuation hierarchy include $199 million and $250 million of participating annuity contracts at December 31, 2020 and 2019, respectively.
(c) At December 31, 2020 and 2019, excludes $487 million and $465 million, respectively, of certain investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient. Investments in level 3 of the valuation hierarchy include $2.7 billion and $2.4 billion of COLI policies at December 31, 2020 and 2019, respectively.

Changes in level 3 fair value measurements using significant unobservable inputs

Investments classified in level 3 of the valuation hierarchy increased $263 million in 2020 from $2.7 billion to $3.0 billion, consisting of $343 million in unrealized gains, partially offset by $113 million in settlements. In addition, there were transfers into level 3 of $33 million. In 2019, there was an increase of $307 million from $2.4 billion to $2.7 billion, consisting of $401 million in unrealized gains, partially offset by $85 million in settlements.

Estimated future benefit payments

The following table presents benefit payments expected to be paid for the U.S. defined benefit pension plans for the years indicated.

Year ended December 31, (in millions)	U.S. defined benefit pension plans
2021	$ 912
2022	918
2023	897
2024	847
2025	829
Years 2026-2030	3,843

Note 9 – Employee share-based incentives

Employee share-based awards

In 2020, 2019 and 2018, JPMorgan Chase granted long-term share-based awards to certain employees under its LTIP, as amended and restated effective May 15, 2018. Under the terms of the LTIP, as of December 31, 2020, 67 million shares of common stock were available for issuance through May 2022. The LTIP is the only active plan under which the Firm is currently granting share-based incentive awards. In the following discussion, the LTIP, plus prior Firm plans and plans assumed as the result of acquisitions, are referred to collectively as the "LTI Plans," and such plans constitute the Firm's share-based incentive plans.

RSUs are awarded at no cost to the recipient upon their grant. Generally, RSUs are granted annually and vest at a rate of 50% after two years and 50% after three years and are converted into shares of common stock as of the vesting date. In addition, RSUs typically include full-career eligibility provisions, which allow employees to continue to vest upon voluntary termination based on age or service-related requirements, subject to post-employment and other restrictions. All RSU awards are subject to forfeiture until vested and contain clawback provisions that may result in cancellation under certain specified circumstances. Predominantly all RSUs entitle the recipient to receive cash payments equivalent to any dividends paid on the underlying common stock during the period the RSUs are outstanding.

Performance share units ("PSUs") are granted annually, and approved by the Firm's Board of Directors, to members of the Firm's Operating Committee under the variable compensation program. PSUs are subject to the Firm's achievement of specified performance criteria over a three-year period. The number of awards that vest can range from zero to 150% of the grant amount. In addition, dividends that accrue during the vesting period are reinvested in dividend equivalent share units. PSUs and the related dividend equivalent share units are converted into shares of common stock after vesting.

Once the PSUs and dividend equivalent share units have vested, the shares of common stock that are delivered, after applicable tax withholding, must be held for an additional two-year period, for a total combined vesting and holding period of approximately five to eight years from the grant date depending on regulations in certain countries.

Under the LTI Plans, stock appreciation rights ("SARs") and stock options have generally been granted with an exercise price equal to the fair value of JPMorgan Chase's common stock on the grant date. SARs and stock options generally expire ten years after the grant date. There were no material grants of SARs or stock options in 2020, 2019 and 2018.

The Firm separately recognizes compensation expense for each tranche of each award, net of estimated forfeitures, as if it were a separate award with its own vesting date. Generally, for each tranche granted, compensation expense is recognized on a straight-line basis from the grant date until the vesting date of the respective tranche, provided that the employees will not become full-career eligible during the vesting period. For awards with full-career eligibility provisions and awards granted with no future substantive service requirement, the Firm accrues the estimated value of awards expected to be awarded to employees as of the grant date without giving consideration to the impact of post-employment restrictions. For each tranche granted to employees who will become full-career eligible during the vesting period, compensation expense is recognized on a straight-line basis from the grant date until the earlier of the employee's full-career eligibility date or the vesting date of the respective tranche.

The Firm's policy for issuing shares upon settlement of employee share-based incentive awards is to issue either new shares of common stock or treasury shares. During 2020, 2019 and 2018, the Firm settled all of its employee share-based awards by issuing treasury shares.

Refer to Note 23 for further information on the classification of share-based awards for purposes of calculating earnings per share.

RSUs, PSUs, SARs and stock options activity

Generally, compensation expense for RSUs and PSUs is measured based on the number of units granted multiplied by the stock price at the grant date, and for SARs and stock options, is measured at the grant date using the Black-Scholes valuation model. Compensation expense for these awards is recognized in net income as described previously. The following table summarizes JPMorgan Chase's RSUs, PSUs, SARs and stock options activity for 2020.

	RSUs/PSUs		SARs/Options			
Year ended December 31, 2020 (in thousands, except weighted-average data, and where otherwise stated)	Number of units	Weighted-average grant date fair value	Number of awards	Weighted-average exercise price	Weighted-average remaining contractual life (in years)	Aggregate intrinsic value
Outstanding, January 1	**52,239**	**$ 99.62**	**5,527**	**$ 41.36**		
Granted	**17,891**	**132.17**	**1**	**137.80**		
Exercised or vested	**(21,502)**	**96.64**	**(2,389)**	**41.40**		
Forfeited	**(1,118)**	**111.59**	**(4)**	**122.59**		
Canceled	**NA**	**NA**	**(11)**	**39.33**		
Outstanding, December 31	**47,510**	**$ 112.85**	**3,124**	**$ 41.25**	**1.4**	**$ 265,059**
Exercisable, December 31	**NA**	**NA**	**3,124**	**41.25**	**1.4**	**265,059**

The total fair value of RSUs that vested during the years ended December 31, 2020, 2019 and 2018, was $2.8 billion, $2.9 billion and $3.6 billion, respectively. The total intrinsic value of options exercised during the years ended December 31, 2020, 2019 and 2018, was $182 million, $503 million and $370 million, respectively.

Compensation expense

The Firm recognized the following noncash compensation expense related to its various employee share-based incentive plans in its Consolidated statements of income.

Year ended December 31, (in millions)	**2020**	2019	2018
Cost of prior grants of RSUs, PSUs, SARs and stock options that are amortized over their applicable vesting periods	**$ 1,101**	$ 1,141	$ 1,241
Accrual of estimated costs of share-based awards to be granted in future periods including those to full-career eligible employees	**1,350**	1,115	1,081
Total noncash compensation expense related to employee share-based incentive plans	**$ 2,451**	$ 2,256	$ 2,322

At December 31, 2020, approximately $664 million (pretax) of compensation expense related to unvested awards had not yet been charged to net income. That cost is expected to be amortized into compensation expense over a weighted-average period of 1.6 years. The Firm does not capitalize any compensation expense related to share-based compensation awards to employees.

Tax benefits

Income tax benefits (including tax benefits from dividends or dividend equivalents) related to share-based incentive arrangements recognized in the Firm's Consolidated statements of income for the years ended December 31, 2020, 2019 and 2018, were $837 million, $895 million and $1.1 billion, respectively.

Note 10 – Investment securities

Investment securities consist of debt securities that are classified as AFS or HTM. Debt securities classified as trading assets are discussed in Note 2. Predominantly all of the Firm's AFS and HTM securities are held by Treasury and CIO in connection with its asset-liability management activities.

AFS securities are carried at fair value on the Consolidated balance sheets. Unrealized gains and losses, after any applicable hedge accounting adjustments or allowance for credit losses, are reported in AOCI. The specific identification method is used to determine realized gains and losses on AFS securities, which are included in investment securities gains/(losses) on the Consolidated statements of income. HTM securities, which the Firm has the intent and ability to hold until maturity, are carried at amortized cost, net of allowance for credit losses, on the Consolidated balance sheets.

For both AFS and HTM securities, purchase discounts or premiums are generally amortized into interest income on a level-yield basis over the contractual life of the security. However, premiums on certain callable debt securities are amortized to the earliest call date.

Effective January 1, 2020, the Firm adopted the CECL accounting guidance, which also amended the AFS securities impairment guidance. Refer to Note 1 for further information.

During 2020, the Firm transferred $164.2 billion of investment securities from AFS to HTM for capital management purposes. AOCI included pretax unrealized gains of $5.0 billion on the securities at the dates of transfer.

Unrealized gains or losses at the date of transfer of these securities continue to be reported in AOCI and are amortized into interest income on a level-yield basis over the remaining life of the securities. This amortization will offset the effect on interest income of the amortization of the premium or discount resulting from the transfer recorded at fair value.

Transfers of securities from AFS to HTM are non-cash transactions and are recorded at fair value.

The amortized costs and estimated fair values of the investment securities portfolio were as follows for the dates indicated.

	2020				2019			
December 31, (in millions)	Amortized cost[(e)]	Gross unrealized gains	Gross unrealized losses	Fair value	Amortized cost[(e)]	Gross unrealized gains	Gross unrealized losses	Fair value
Available-for-sale securities								
Mortgage-backed securities:								
U.S. GSEs and government agencies[(a)]	**$ 110,979**	**$ 2,372**	**$ 50**	**$ 113,301**	$ 107,811	$ 2,395	$ 89	$ 110,117
Residential:								
U.S.	**6,246**	**224**	**3**	**6,467**	10,223	233	6	10,450
Non-U.S.	**3,751**	**20**	**5**	**3,766**	2,477	64	1	2,540
Commercial	**2,819**	**71**	**34**	**2,856**	5,137	64	13	5,188
Total mortgage-backed securities	**123,795**	**2,687**	**92**	**126,390**	125,648	2,756	109	128,295
U.S. Treasury and government agencies	**199,910**	**2,141**	**100**	**201,951**	139,162	449	175	139,436
Obligations of U.S. states and municipalities	**18,993**	**1,404**	**1**	**20,396**	27,693	2,118	1	29,810
Certificates of deposit	**—**	**—**	**—**	**—**	77	—	—	77
Non-U.S. government debt securities	**22,587**	**354**	**13**	**22,928**	21,427	377	17	21,787
Corporate debt securities	**215**	**4**	**3**	**216**	823	22	—	845
Asset-backed securities:								
Collateralized loan obligations	**10,055**	**24**	**31**	**10,048**	25,038	9	56	24,991
Other	**6,174**	**91**	**16**	**6,249**	5,438	40	20	5,458
Total available-for-sale securities[(b)]	**381,729**	**6,705**	**256**	**388,178**	345,306	5,771	378	350,699
Held-to-maturity securities[(c)]								
Mortgage-backed securities:								
U.S. GSEs and government agencies[(a)]	**107,889**	**2,968**	**29**	**110,828**	36,523	1,165	62	37,626
U.S. Residential	**4,345**	**8**	**30**	**4,323**	—	—	—	—
Commercial	**2,602**	**77**	**—**	**2,679**	—	—	—	—
Total mortgage-backed securities	**114,836**	**3,053**	**59**	**117,830**	36,523	1,165	62	37,626
U.S. Treasury and government agencies	**53,184**	**50**	**—**	**53,234**	51	—	1	50
Obligations of U.S. states and municipalities	**12,751**	**519**	**—**	**13,270**	4,797	299	—	5,096
Asset-backed securities:								
Collateralized loan obligations	**21,050**	**90**	**2**	**21,138**	6,169	—	—	6,169
Total held-to-maturity securities, net of allowance for credit losses[(d)]	**201,821**	**3,712**	**61**	**205,472**	47,540	1,464	63	48,941
Total investment securities, net of allowance for credit losses[(d)]	**$ 583,550**	**$ 10,417**	**$ 317**	**$ 593,650**	$ 392,846	$ 7,235	$ 441	$ 399,640

(a) Includes AFS U.S. GSE obligations with fair values of $65.8 billion and $78.5 billion, and HTM U.S. GSE obligations with amortized cost of $86.3 billion and $31.6 billion, at December 31, 2020 and 2019, respectively. As of December 31, 2020, mortgage-backed securities issued by Fannie Mae and Freddie Mac each exceeded 10% of JPMorgan Chase's total stockholders' equity; the amortized cost and fair value of such securities were $95.7 billion and $98.8 billion, and $54.7 billion and $55.8 billion, respectively.

(b) There was no allowance for credit losses on AFS securities at December 31, 2020.

(c) The Firm purchased $12.4 billion, $13.4 billion and $9.4 billion of HTM securities for the years ended December 31, 2020, 2019 and 2018, respectively.

(d) HTM securities measured at amortized cost are reported net of allowance for credit losses of $78 million at December 31, 2020.

(e) Excludes $2.1 billion and $1.9 billion of accrued interest receivables at December 31, 2020 and 2019, respectively. The Firm did not reverse through interest income any accrued interest receivables for the years ended December 31, 2020 and 2019.

At December 31, 2020, the investment securities portfolio consisted of debt securities with an average credit rating of AA+ (based upon external ratings where available, and where not available, based primarily upon internal risk ratings). Risk ratings are used to identify the credit quality of securities and differentiate risk within the portfolio. The Firm's internal risk ratings generally align with the qualitative characteristics (e.g., borrower capacity to meet financial commitments and vulnerability to changes in the economic environment) defined by S&P and Moody's, however the quantitative characteristics (e.g., probability of default ("PD") and loss given default ("LGD")) may differ as they reflect internal historical experiences and assumptions. Risk ratings are assigned at acquisition, are reviewed on a regular and ongoing basis by Credit Risk Management and are adjusted as necessary over the life of the investment for updated information affecting the issuer's ability to fulfill its obligations.

AFS securities impairment

The following tables present the fair value and gross unrealized losses by aging category for AFS securities at December 31, 2020 and 2019. The tables exclude U.S. Treasury and government agency securities and U.S. GSE and government agency MBS with unrealized losses of $150 million and $264 million, at December 31, 2020 and 2019, respectively; changes in the value of these securities are generally driven by changes in interest rates rather than changes in their credit profile given the explicit or implicit guarantees provided by the U.S. government.

	Available-for-sale securities with gross unrealized losses					
	Less than 12 months		12 months or more			
December 31, 2020 (in millions)	Fair value	Gross unrealized losses	Fair value	Gross unrealized losses	Total fair value	Total gross unrealized losses
Available-for-sale securities						
Mortgage-backed securities:						
Residential:						
U.S.	**$ 562**	**$ 3**	**$ 32**	**$ –**	**$ 594**	**$ 3**
Non-U.S.	**2,507**	**4**	**235**	**1**	**2,742**	**5**
Commercial	**699**	**18**	**124**	**16**	**823**	**34**
Total mortgage-backed securities	**3,768**	**25**	**391**	**17**	**4,159**	**42**
Obligations of U.S. states and municipalities	**49**	**1**	**–**	**–**	**49**	**1**
Certificates of deposit	**–**	**–**	**–**	**–**	**–**	**–**
Non-U.S. government debt securities	**2,709**	**9**	**968**	**4**	**3,677**	**13**
Corporate debt securities	**91**	**3**	**5**	**–**	**96**	**3**
Asset-backed securities:						
Collateralized loan obligations	**5,248**	**18**	**2,645**	**13**	**7,893**	**31**
Other	**268**	**1**	**685**	**15**	**953**	**16**
Total available-for-sale securities with gross unrealized losses	**$ 12,133**	**$ 57**	**$ 4,694**	**$ 49**	**$ 16,827**	**$ 106**

	Available-for-sale securities with gross unrealized losses					
	Less than 12 months		12 months or more			
December 31, 2019 (in millions)	Fair value	Gross unrealized losses	Fair value	Gross unrealized losses	Total fair value	Total gross unrealized losses
Available-for-sale securities						
Mortgage-backed securities:						
Residential:						
U.S.	$ 1,072	$ 3	$ 423	$ 3	$ 1,495	$ 6
Non-U.S.	13	–	420	1	433	1
Commercial	1,287	12	199	1	1,486	13
Total mortgage-backed securities	2,372	15	1,042	5	3,414	20
Obligations of U.S. states and municipalities	186	1	–	–	186	1
Certificates of deposit	77	–	–	–	77	–
Non-U.S. government debt securities	3,970	13	1,406	4	5,376	17
Corporate debt securities	–	–	–	–	–	–
Asset-backed securities:						
Collateralized loan obligations	10,364	11	7,756	45	18,120	56
Other	1,639	9	753	11	2,392	20
Total available-for-sale securities with gross unrealized losses	$ 18,608	$ 49	$ 10,957	$ 65	$ 29,565	$ 114

As a result of the adoption of the amended AFS securities impairment guidance, an allowance for credit losses on AFS securities is required for impaired securities if a credit loss exists.

AFS securities are considered impaired if the fair value is less than the amortized cost.

The Firm recognizes impairment losses in earnings if the Firm has the intent to sell the debt security, or if it is more likely than not that the Firm will be required to sell the debt security before recovery of its amortized cost. In these circumstances the impairment loss recognized in investment securities gains/(losses) is equal to the full difference between the amortized cost (net of allowance if applicable) and the fair value of the securities.

For impaired debt securities that the Firm has the intent and ability to hold, the securities are evaluated to determine if a credit loss exists. If it is determined that a credit loss exists, that loss is recognized as an allowance for credit losses through the provision for credit losses in the Consolidated Statements of Income, limited by the amount of impairment. Any impairment not due to credit losses is recorded in OCI.

Factors considered in evaluating credit losses include adverse conditions specifically related to the industry, geographic area or financial condition of the issuer or underlying collateral of a security; and payment structure of the security.

When assessing securities issued in a securitization for credit losses, the Firm estimates cash flows considering relevant market and economic data, underlying loan-level data, and structural features of the securitization, such as subordination, excess spread, overcollateralization or other forms of credit enhancement, and compares the losses projected for the underlying collateral ("pool losses") against the level of credit enhancement in the securitization structure to determine whether these features are sufficient to absorb the pool losses, or whether a credit loss exists.

For beneficial interests in securitizations that are rated below "AA" at their acquisition, or that can be contractually prepaid or otherwise settled in such a way that the Firm would not recover substantially all of its recorded investment, the Firm evaluates impairment for credit losses when there is an adverse change in expected cash flows.

Allowance for credit losses
Based on its assessment, the Firm did not recognize an allowance for credit losses on impaired AFS securities as of January 1, 2020 or December 31, 2020.

HTM securities – credit risk

The adoption of the CECL accounting guidance requires management to estimate expected credit losses on HTM securities over the remaining expected life and recognize this estimate as an allowance for credit losses. As a result of the adoption of this guidance, the Firm recognized an allowance for credit losses on HTM obligations of U.S. states and municipalities of $10 million as a cumulative-effect adjustment to retained earnings as of January 1, 2020.

Credit quality indicator

The primary credit quality indicator for HTM securities is the risk rating assigned to each security. At December 31, 2020, all HTM securities were rated investment grade and were current and accruing, with approximately 98% rated at least AA+.

Allowance for credit losses

The allowance for credit losses on HTM obligations of U.S. states and municipalities and commercial mortgage-backed securities is calculated by applying statistical credit loss factors (estimated PD and LGD) to the amortized cost. The credit loss factors are derived using a weighted average of five internally developed eight-quarter macroeconomic scenarios, followed by a single year straight-line interpolation to revert to long run historical information for periods beyond the forecast period. Refer to Note 13 for further information on the eight-quarter macroeconomic forecast.

The allowance for credit losses on HTM collateralized loan obligations and U.S. residential mortgage-backed securities is calculated as the difference between the amortized cost and the present value of the cash flows expected to be collected, discounted at the security's effective interest rate. These cash flow estimates are developed based on expectations of underlying collateral performance derived using the eight-quarter macroeconomic forecast and the single year straight-line interpolation, as well as considering the structural features of the security.

The application of different inputs and assumptions into the calculation of the allowance for credit losses is subject to significant management judgment, and emphasizing one input or assumption over another, or considering other inputs or assumptions, could affect the estimate of the allowance for credit losses on HTM securities.

The allowance for credit losses on HTM securities was $78 million as of December 31, 2020, reflecting $68 million recognized in the provision for credit losses for the year ended December 31, 2020.

Selected impacts of investment securities on the Consolidated statements of income

Year ended December 31, (in millions)	**2020**	2019	2018
Realized gains	**$ 3,080**	$ 650	$ 211
Realized losses	**(2,278)**	(392)	(606)
Net investment securities gains/ (losses)	**$ 802**	$ 258	$ (395)
Provision for credit losses	**$ 68**	NA	NA

Contractual maturities and yields

The following table presents the amortized cost and estimated fair value at December 31, 2020, of JPMorgan Chase's investment securities portfolio by contractual maturity.

By remaining maturity December 31, 2020 (in millions)	Due in one year or less	Due after one year through five years	Due after five years through 10 years	Due after 10 years[(b)]	Total
Available-for-sale securities					
Mortgage-backed securities					
Amortized cost	$ –	$ 741	$ 7,797	$ 115,257	$ 123,795
Fair value	–	756	8,139	117,495	126,390
Average yield[(a)]	– %	1.66 %	1.67 %	2.57 %	2.51 %
U.S. Treasury and government agencies					
Amortized cost	$ 33,633	$ 110,033	$ 46,827	$ 9,417	$ 199,910
Fair value	33,678	111,014	47,675	9,584	201,951
Average yield[(a)]	0.42 %	0.53 %	0.79 %	0.48 %	0.57 %
Obligations of U.S. states and municipalities					
Amortized cost	$ 33	$ 203	$ 1,047	$ 17,710	$ 18,993
Fair value	33	211	1,111	19,041	20,396
Average yield[(a)]	4.11 %	4.59 %	4.84 %	4.80 %	4.80 %
Non-U.S. government debt securities					
Amortized cost	$ 8,282	$ 8,011	$ 5,615	$ 679	$ 22,587
Fair value	8,297	8,225	5,726	680	22,928
Average yield[(a)]	1.25 %	1.70 %	0.68 %	0.17 %	1.24 %
Corporate debt securities					
Amortized cost	$ –	$ 141	$ 74	$ –	$ 215
Fair value	–	139	77	–	216
Average yield[(a)]	– %	1.21 %	1.92 %	– %	1.45 %
Asset-backed securities					
Amortized cost	$ 554	$ 2,569	$ 5,987	$ 7,119	$ 16,229
Fair value	554	2,591	5,990	7,162	16,297
Average yield[(a)]	1.31 %	2.00 %	1.33 %	1.48 %	1.50 %
Total available-for-sale securities					
Amortized cost	$ 42,502	$ 121,698	$ 67,347	$ 150,182	$ 381,729
Fair value	42,562	122,936	68,718	153,962	388,178
Average yield[(a)]	0.59 %	0.65 %	1.00 %	2.64 %	1.49 %
Held-to-maturity securities					
Mortgage-backed securities					
Amortized cost	$ –	$ 158	$ 11,908	$ 102,791	$ 114,857
Fair value	–	160	12,707	104,963	117,830
Average yield[(a)]	– %	1.56 %	2.42 %	2.94 %	2.88 %
U.S. Treasury and government agencies					
Amortized cost	$ 501	$ 42,477	$ 10,206	$ –	$ 53,184
Fair value	501	42,511	10,222	–	53,234
Average yield[(a)]	1.86 %	0.60 %	0.94 %	– %	0.67 %
Obligations of U.S. states and municipalities					
Amortized cost	$ –	$ 65	$ 532	$ 12,211	$ 12,808
Fair value	–	67	565	12,638	13,270
Average yield[(a)]	– %	3.09 %	3.57 %	3.62 %	3.62 %
Asset-backed securities					
Amortized cost	$ –	$ –	$ 11,617	$ 9,433	$ 21,050
Fair value	–	–	11,658	9,480	21,138
Average yield[(a)]	– %	– %	1.40 %	1.33 %	1.37 %
Total held-to-maturity securities					
Amortized cost	$ 501	$ 42,700	$ 34,263	$ 124,435	$ 201,899
Fair value	501	42,738	35,152	127,081	205,472
Average yield[(a)]	1.86 %	0.60 %	1.65 %	2.88 %	2.19 %

(a) Average yield is computed using the effective yield of each security owned at the end of the period, weighted based on the amortized cost of each security. The effective yield considers the contractual coupon, amortization of premiums and accretion of discounts, and the effect of related hedging derivatives. Taxable-equivalent amounts are used where applicable. The effective yield excludes unscheduled principal prepayments; and accordingly, actual maturities of securities may differ from their contractual or expected maturities as certain securities may be prepaid. However, for certain callable debt securities, the average yield is calculated to the earliest call date.

(b) Substantially all of the Firm's U.S. residential MBS and collateralized mortgage obligations are due in 10 years or more, based on contractual maturity. The estimated weighted-average life, which reflects anticipated future prepayments, is approximately 5 years for agency residential MBS, 4 years for agency residential collateralized mortgage obligations and 3 years for nonagency residential collateralized mortgage obligations.

Note 11 – Securities financing activities

JPMorgan Chase enters into resale, repurchase, securities borrowed and securities loaned agreements (collectively, "securities financing agreements") primarily to finance the Firm's inventory positions, acquire securities to cover short sales, accommodate customers' financing needs, settle other securities obligations and to deploy the Firm's excess cash.

Securities financing agreements are treated as collateralized financings on the Firm's Consolidated balance sheets. Where appropriate under applicable accounting guidance, securities financing agreements with the same counterparty are reported on a net basis. Refer to Note 1 for further discussion of the offsetting of assets and liabilities. Fees received and paid in connection with securities financing agreements are recorded over the life of the agreement in interest income and interest expense on the Consolidated statements of income.

The Firm has elected the fair value option for certain securities financing agreements. Refer to Note 3 for further information regarding the fair value option. The securities financing agreements for which the fair value option has been elected are reported within securities purchased under resale agreements, securities loaned or sold under repurchase agreements, and securities borrowed on the Consolidated balance sheets. Generally, for agreements carried at fair value, current-period interest accruals are recorded within interest income and interest expense, with changes in fair value reported in principal transactions revenue. However, for financial instruments containing embedded derivatives that would be separately accounted for in accordance with accounting guidance for hybrid instruments, all changes in fair value, including any interest elements, are reported in principal transactions revenue.

Securities financing agreements not elected under the fair value option are measured at amortized cost. As a result of the Firm's credit risk mitigation practices described below, the Firm did not hold any allowance for credit losses with respect to resale and securities borrowed arrangements as of December 31, 2020 and 2019.

Credit risk mitigation practices

Securities financing agreements expose the Firm primarily to credit and liquidity risk. To manage these risks, the Firm monitors the value of the underlying securities (predominantly high-quality securities collateral, including government-issued debt and U.S. GSEs and government agencies MBS) that it has received from or provided to its counterparties compared to the value of cash proceeds and exchanged collateral, and either requests additional collateral or returns securities or collateral when appropriate. Margin levels are initially established based upon the counterparty, the type of underlying securities, and the permissible collateral, and are monitored on an ongoing basis.

In resale and securities borrowed agreements, the Firm is exposed to credit risk to the extent that the value of the securities received is less than initial cash principal advanced and any collateral amounts exchanged. In repurchase and securities loaned agreements, credit risk exposure arises to the extent that the value of underlying securities advanced exceeds the value of the initial cash principal received, and any collateral amounts exchanged.

Additionally, the Firm typically enters into master netting agreements and other similar arrangements with its counterparties, which provide for the right to liquidate the underlying securities and any collateral amounts exchanged in the event of a counterparty default. It is also the Firm's policy to take possession, where possible, of the securities underlying resale and securities borrowed agreements. Refer to Note 29 for further information regarding assets pledged and collateral received in securities financing agreements.

The table below summarizes the gross and net amounts of the Firm's securities financing agreements, as of December 31, 2020 and 2019. When the Firm has obtained an appropriate legal opinion with respect to a master netting agreement with a counterparty and where other relevant netting criteria under U.S. GAAP are met, the Firm nets, on the Consolidated balance sheets, the balances outstanding under its securities financing agreements with the same counterparty. In addition, the Firm exchanges securities and/or cash collateral with its counterparty to reduce the economic exposure with the counterparty, but such collateral is not eligible for net Consolidated balance sheet presentation. Where the Firm has obtained an appropriate legal opinion with respect to the counterparty master netting agreement, such collateral, along with securities financing balances that do not meet all these relevant netting criteria under U.S. GAAP, is presented in the table below as "Amounts not nettable on the Consolidated balance sheets," and reduces the "Net amounts" presented. Where a legal opinion has not been either sought or obtained, the securities financing balances are presented gross in the "Net amounts" below.

	2020				
December 31, (in millions)	Gross amounts	Amounts netted on the Consolidated balance sheets	Amounts presented on the Consolidated balance sheets	Amounts not nettable on the Consolidated balance sheets[(b)]	Net amounts[(c)]
Assets					
Securities purchased under resale agreements	**$ 666,467**	**$ (370,183)**	**$ 296,284**	**$ (273,206)**	**$ 23,078**
Securities borrowed	**193,700**	**(33,065)**	**160,635**	**(115,219)**	**45,416**
Liabilities					
Securities sold under repurchase agreements	**$ 578,060**	**$ (370,183)**	**$ 207,877**	**$ (191,980)**	**$ 15,897**
Securities loaned and other[(a)]	**41,366**	**(33,065)**	**8,301**	**(8,257)**	**44**

	2019				
December 31, (in millions)	Gross amounts	Amounts netted on the Consolidated balance sheets	Amounts presented on the Consolidated balance sheets	Amounts not nettable on the Consolidated balance sheets[(b)]	Net amounts[(c)]
Assets					
Securities purchased under resale agreements	$ 628,609	$ (379,463)	$ 249,146	$ (231,147) [(d)]	$ 17,999 [(d)]
Securities borrowed	166,718	(26,960)	139,758	(104,990)	34,768
Liabilities					
Securities sold under repurchase agreements	$ 555,172	$ (379,463)	$ 175,709	$ (151,566)	$ 24,143
Securities loaned and other[(a)]	36,649	(26,960)	9,689	(9,654)	35

(a) Includes securities-for-securities lending agreements of $3.4 billion and $3.7 billion at December 31, 2020 and 2019, respectively, accounted for at fair value, where the Firm is acting as lender. In the Consolidated balance sheets, the Firm recognizes the securities received at fair value within other assets and the obligation to return those securities within accounts payable and other liabilities.

(b) In some cases, collateral exchanged with a counterparty exceeds the net asset or liability balance with that counterparty. In such cases, the amounts reported in this column are limited to the related net asset or liability with that counterparty.

(c) Includes securities financing agreements that provide collateral rights, but where an appropriate legal opinion with respect to the master netting agreement has not been either sought or obtained. At December 31, 2020 and 2019, included $17.0 billion and $11.0 billion, respectively, of securities purchased under resale agreements; $42.1 billion and $31.9 billion, respectively, of securities borrowed; $14.5 billion and $22.7 billion, respectively, of securities sold under repurchase agreements; and $8 million and $7 million, respectively, of securities loaned and other.

(d) The prior period amounts have been revised to conform with the current period presentation.

The tables below present as of December 31, 2020 and 2019 the types of financial assets pledged in securities financing agreements and the remaining contractual maturity of the securities financing agreements.

	Gross liability balance			
	2020		2019	
December 31, (in millions)	Securities sold under repurchase agreements	Securities loaned and other	Securities sold under repurchase agreements	Securities loaned and other
Mortgage-backed securities:				
U.S. GSEs and government agencies	**$ 56,744**	**$ –**	$ 34,119	$ –
Residential - nonagency	**1,016**	**–**	1,239	–
Commercial - nonagency	**855**	**–**	1,612	–
U.S. Treasury, GSEs and government agencies	**315,834**	**143**	334,398	29
Obligations of U.S. states and municipalities	**1,525**	**2**	1,181	–
Non-U.S. government debt	**157,563**	**1,730**	145,548	1,528
Corporate debt securities	**22,849**	**1,864**	13,826	1,580
Asset-backed securities	**694**	**–**	1,794	–
Equity securities	**20,980**	**37,627**	21,455	33,512
Total	**$ 578,060**	**$ 41,366**	$ 555,172	$ 36,649

	Remaining contractual maturity of the agreements				
2020 (in millions)	Overnight and continuous	Up to 30 days	30 – 90 days	Greater than 90 days	Total
Total securities sold under repurchase agreements	**$ 238,667**	**$ 230,980**	**$ 70,777**	**$ 37,636**	**$ 578,060**
Total securities loaned and other	**37,887**	**1,647**	**500**	**1,332**	**41,366**

	Remaining contractual maturity of the agreements				
2019 (in millions)	Overnight and continuous	Up to 30 days	30 – 90 days	Greater than 90 days	Total
Total securities sold under repurchase agreements	$ 225,134	$ 195,816 (a)	$ 56,020 (a)	$ 78,202 (a)	$ 555,172
Total securities loaned and other	32,028	1,706	937	1,978	36,649

(a) The prior period amounts have been revised to conform with the current period presentation.

Transfers not qualifying for sale accounting

At December 31, 2020 and 2019, the Firm held $598 million and $743 million, respectively, of financial assets for which the rights have been transferred to third parties; however, the transfers did not qualify as a sale in accordance with U.S. GAAP. These transfers have been recognized as collateralized financing transactions. The transferred assets are recorded in trading assets and loans, and the corresponding liabilities are recorded predominantly in short-term borrowings on the Consolidated balance sheets.

Note 12 – Loans

Loan accounting framework

The accounting for a loan depends on management's strategy for the loan. The Firm accounts for loans based on the following categories:

- Originated or purchased loans held-for-investment (i.e., "retained")
- Loans held-for-sale
- Loans at fair value

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. Refer to Note 1 for further information.

The following provides a detailed accounting discussion of the Firm's loans by category:

Loans held-for-investment

Originated or purchased loans held-for-investment are recorded at the principal amount outstanding, net of the following: charge-offs; interest applied to principal (for loans accounted for on the cost recovery method); unamortized discounts and premiums; and net deferred loan fees or costs. Credit card loans also include billed finance charges and fees.

Interest income

Interest income on performing loans held-for-investment is accrued and recognized as interest income at the contractual rate of interest. Purchase price discounts or premiums, as well as net deferred loan fees or costs, are amortized into interest income over the contractual life of the loan as an adjustment of yield.

The Firm classifies accrued interest on loans, including accrued but unbilled interest on credit card loans, in accrued interest and accounts receivables on the Consolidated balance sheets. For credit card loans, accrued interest once billed is then recognized in the loan balances, with the related allowance recorded in the allowance for credit losses. Changes in the allowance for credit losses on accrued interest on credit card loans are recognized in the provision for credit losses and charge-offs are recognized by reversing interest income. Expected losses related to accrued interest on certain performing, modified loans to borrowers impacted by COVID-19 are considered in the Firm's allowance for loan losses. For other loans, the Firm generally does not recognize an allowance for credit losses on accrued interest receivables, consistent with its policy to write them off no later than 90 days past due by reversing interest income.

Nonaccrual loans

Nonaccrual loans are those on which the accrual of interest has been suspended. Loans (other than credit card loans and certain consumer loans insured by U.S. government agencies) are placed on nonaccrual status and considered nonperforming when full payment of principal and interest is not expected, regardless of delinquency status, or when principal and interest has been in default for a period of 90 days or more, unless the loan is both well-secured and in the process of collection. A loan is determined to be past due when the minimum payment is not received from the borrower by the contractually specified due date or for certain loans (e.g., residential real estate loans), when a monthly payment is due and unpaid for 30 days or more. Finally, collateral-dependent loans are typically maintained on nonaccrual status.

On the date a loan is placed on nonaccrual status, all interest accrued but not collected is reversed against interest income. In addition, the amortization of deferred amounts is suspended. Interest income on nonaccrual loans may be recognized as cash interest payments are received (i.e., on a cash basis) if the recorded loan balance is deemed fully collectible; however, if there is doubt regarding the ultimate collectibility of the recorded loan balance, all interest cash receipts are applied to reduce the carrying value of the loan (the cost recovery method). For consumer loans, application of this policy typically results in the Firm recognizing interest income on nonaccrual consumer loans on a cash basis.

A loan may be returned to accrual status when repayment is reasonably assured and there has been demonstrated performance under the terms of the loan or, if applicable, the terms of the restructured loan.

As permitted by regulatory guidance, credit card loans are generally exempt from being placed on nonaccrual status; accordingly, interest and fees related to credit card loans continue to accrue until the loan is charged off or paid in full.

Allowance for loan losses

The allowance for loan losses represents the estimated expected credit losses in the held-for-investment loan portfolio at the balance sheet date and is recognized on the balance sheet as a contra asset, which brings the amortized cost to the net carrying value. Changes in the allowance for loan losses are recorded in the provision for credit losses on the Firm's Consolidated statements of income. Refer to Note 13 for further information on the Firm's accounting policies for the allowance for loan losses.

Charge-offs

Consumer loans are generally charged off or charged down to the lower of the amortized cost or the net realizable value of the underlying collateral (i.e., fair value less estimated costs to sell), with an offset to the allowance for loan losses, upon reaching specified stages of delinquency in accordance with standards established by the FFIEC. Residential real estate loans, unmodified credit card loans and scored business banking loans are generally charged off no later than 180 days past due. Scored auto and modified credit card loans are charged off no later than 120 days past due.

Certain consumer loans are charged off or charged down to their net realizable value earlier than the FFIEC charge-off standards in certain circumstances as follows:

- Loans modified in a TDR that are determined to be collateral-dependent.
- Loans to borrowers who have experienced an event that suggests a loss is either known or highly certain are subject to accelerated charge-off standards (e.g., residential real estate and auto loans are charged off or charged down within 60 days of receiving notification of a bankruptcy filing).
- Auto loans upon repossession of the automobile.

Other than in certain limited circumstances, the Firm typically does not recognize charge-offs on the government-guaranteed portion of loans.

Wholesale loans are charged off when it is highly certain that a loss has been realized. The determination of whether to recognize a charge-off includes many factors, including the prioritization of the Firm's claim in bankruptcy, expectations of the workout/restructuring of the loan and valuation of the borrower's equity or the loan collateral.

When a loan is charged down to the lower of its amortized cost or the estimated net realizable value of the underlying collateral, the determination of the fair value of the collateral depends on the type of collateral (e.g., securities, real estate). In cases where the collateral is in the form of liquid securities, the fair value is based on quoted market prices or broker quotes. For illiquid securities or other financial assets, the fair value of the collateral is generally estimated using a discounted cash flow model.

For residential real estate loans, collateral values are based upon external valuation sources. When it becomes likely that a borrower is either unable or unwilling to pay, the Firm utilizes a broker's price opinion, appraisal and/or an automated valuation model of the home based on an exterior-only valuation ("exterior opinions"), which is then updated at least every twelve months, or more frequently depending on various market factors. As soon as practicable after the Firm receives the property in satisfaction of a debt (e.g., by taking legal title or physical possession), the Firm generally obtains an appraisal based on an inspection that includes the interior of the home ("interior appraisals"). Exterior opinions and interior appraisals are discounted based upon the Firm's experience with actual liquidation values as compared with the estimated values provided by exterior opinions and interior appraisals, considering state-specific factors.

For commercial real estate loans, collateral values are generally based on appraisals from internal and external valuation sources. Collateral values are typically updated every six to twelve months, either by obtaining a new appraisal or by performing an internal analysis, in accordance with the Firm's policies. The Firm also considers both borrower- and market-specific factors, which may result in obtaining appraisal updates or broker price opinions at more frequent intervals.

Loans held-for-sale

Loans held-for-sale are measured at the lower of cost or fair value, with valuation changes recorded in noninterest revenue. For consumer loans, the valuation is performed on a portfolio basis. For wholesale loans, the valuation is performed on an individual loan basis.

Interest income on loans held-for-sale is accrued and recognized based on the contractual rate of interest.

Loan origination fees or costs and purchase price discounts or premiums are deferred in a contra loan account until the related loan is sold. The deferred fees or costs and discounts or premiums are an adjustment to the basis of the loan and therefore are included in the periodic determination of the lower of cost or fair value adjustments and/or the gain or loss recognized at the time of sale.

Because these loans are recognized at the lower of cost or fair value, the Firm's allowance for loan losses and charge-off policies do not apply to these loans. However, loans held-for-sale are subject to the nonaccrual policies described above.

Loans at fair value

Loans for which the fair value option has been elected are measured at fair value, with changes in fair value recorded in noninterest revenue.

Interest income on these loans is accrued and recognized based on the contractual rate of interest. Changes in fair value are recognized in noninterest revenue. Loan origination fees are recognized upfront in noninterest revenue. Loan origination costs are recognized in the associated expense category as incurred.

Because these loans are recognized at fair value, the Firm's allowance for loan losses and charge-off policies do not apply to these loans. However, loans at fair value are subject to the nonaccrual policies described above.

Refer to Note 3 for further information on the Firm's elections of fair value accounting under the fair value option. Refer to Note 2 and Note 3 for further information on loans carried at fair value and classified as trading assets.

Loan classification changes

Loans in the held-for-investment portfolio that management decides to sell are transferred to the held-for-sale portfolio at the lower of cost or fair value on the date of transfer. Credit-related losses are charged against the allowance for loan losses; non-credit related losses such as those due to changes in interest rates or foreign currency exchange rates are recognized in noninterest revenue.

In the event that management decides to retain a loan in the held-for-sale portfolio, the loan is transferred to the held-for-investment portfolio at amortized cost on the date of transfer. These loans are subsequently assessed for impairment based on the Firm's allowance methodology. Refer to Note 13 for a further discussion of the methodologies used in establishing the Firm's allowance for loan losses.

Loan modifications

The Firm seeks to modify certain loans in conjunction with its loss mitigation activities. Through the modification, JPMorgan Chase grants one or more concessions to a borrower who is experiencing financial difficulty in order to minimize the Firm's economic loss and avoid foreclosure or repossession of the collateral, and to ultimately maximize payments received by the Firm from the borrower. The concessions granted vary by program and by borrower-specific characteristics, and may include interest rate reductions, term extensions, payment delays, principal forgiveness, or the acceptance of equity or other assets in lieu of payments. Such modifications are accounted for and reported as TDRs. Loans with short-term and other insignificant modifications that are not considered concessions are not TDRs.

Loans, except for credit card loans, modified in a TDR are generally placed on nonaccrual status, although in many cases such loans were already on nonaccrual status prior to modification. These loans may be returned to performing status (the accrual of interest is resumed) if the following criteria are met: (i) the borrower has performed under the modified terms for a minimum of six months and/or six payments, and (ii) the Firm has an expectation that repayment of the modified loan is reasonably assured based on, for example, the borrower's debt capacity and level of future earnings, collateral values, LTV ratios, and other current market considerations. In certain limited and well-defined circumstances in which the loan is current at the modification date, such loans are not placed on nonaccrual status at the time of modification.

Loans modified in TDRs are generally measured for impairment using the Firm's established asset-specific allowance methodology, which considers the expected re-default rates for the modified loans. A loan modified in a TDR generally remains subject to the asset-specific component of the allowance throughout its remaining life, regardless of whether the loan is performing and has been returned to accrual status. Refer to Note 13 for further discussion of the methodology used to estimate the Firm's asset-specific allowance.

The Firm has granted various forms of assistance to customers and clients impacted by the COVID-19 pandemic, including payment deferrals and covenant modifications. The majority of the Firm's COVID-19 related loan modifications have not been considered TDRs because:

- they represent short-term or other insignificant modifications, whether under the Firm's regular loan modification assessments or as permitted by regulatory guidance, or
- the Firm has elected to apply the option to suspend the application of accounting guidance for TDRs as provided by the CARES Act and extended by the Consolidated Appropriations Act.

To the extent that certain modifications do not meet any of the above criteria, the Firm accounts for them as TDRs.

As permitted by regulatory guidance, the Firm does not place loans with deferrals granted due to COVID-19 on nonaccrual status where such loans are not otherwise reportable as nonaccrual. The Firm considers expected losses of principal and accrued interest associated with all COVID-19 related loan modifications in its allowance for credit losses.

Assistance provided in response to the COVID-19 pandemic could delay the recognition of delinquencies, nonaccrual status, and net charge-offs for those customers who would have otherwise moved into past due or nonaccrual status.

Foreclosed property

The Firm acquires property from borrowers through loan restructurings, workouts, and foreclosures. Property acquired may include real property (e.g., residential real estate, land, and buildings) and commercial and personal property (e.g., automobiles, aircraft, railcars, and ships).

The Firm recognizes foreclosed property upon receiving assets in satisfaction of a loan (e.g., by taking legal title or physical possession). For loans collateralized by real property, the Firm generally recognizes the asset received at foreclosure sale or upon the execution of a deed in lieu of foreclosure transaction with the borrower. Foreclosed assets are reported in other assets on the Consolidated balance sheets and initially recognized at fair value less estimated costs to sell. Each quarter the fair value of the acquired property is reviewed and adjusted, if necessary, to the lower of cost or fair value. Subsequent adjustments to fair value are charged/credited to noninterest revenue. Operating expense, such as real estate taxes and maintenance, are charged to other expense.

In response to the COVID-19 pandemic, the Firm has temporarily suspended certain foreclosure activities. This could delay recognition of foreclosed properties until the foreclosure moratoriums are lifted.

Loan portfolio

The Firm's loan portfolio is divided into three portfolio segments, which are the same segments used by the Firm to determine the allowance for loan losses: Consumer, excluding credit card; Credit card; and Wholesale. Within each portfolio segment the Firm monitors and assesses the credit risk in the following classes of loans, based on the risk characteristics of each loan class.

In conjunction with the adoption of CECL, the Firm revised its loan classes. Prior-period amounts have been revised to conform with the current presentation:

- The consumer, excluding credit card portfolio segment's residential mortgage and home equity loans and lending-related commitments have been combined into a residential real estate class.
- Upon adoption of CECL, the Firm elected to discontinue the pool-level accounting for PCI loans and to account for these loans on an individual loan basis. PCI loans are considered PCD loans under CECL and are subject to the Firm's nonaccrual and charge-off policies. PCD loans are now reported in the consumer, excluding credit card portfolio segment's residential real estate class.
- Risk-rated business banking and auto dealer loans and lending-related commitments held in CCB were reclassified from the consumer, excluding credit card portfolio segment, to the wholesale portfolio segment, to align with the methodology applied when determining the allowance. The remaining scored auto and business banking loans and lending-related commitments have been combined into an auto and other class.
- The wholesale portfolio segment's classes, previously based on the borrower's primary business activity, have been revised to align with the loan classifications as defined by the bank regulatory agencies, based on the loan's collateral, purpose, and type of borrower.

Consumer, excluding credit card	Credit card	Wholesale(c)
• Residential real estate(a) • Auto and other(b)	• Credit card loans	• Secured by real estate • Commercial and industrial • Other(d)

(a) Includes scored mortgage and home equity loans held in CCB and AWM, and scored mortgage loans held in CIB and Corporate.
(b) Includes scored auto and business banking loans and overdrafts.
(c) Includes loans held in CIB, CB, AWM, Corporate as well as risk-rated business banking and auto dealer loans held in CCB for which the wholesale methodology is applied when determining the allowance for loan losses.
(d) Includes loans to financial institutions, states and political subdivisions, SPEs, nonprofits, personal investment companies and trusts, as well as loans to individuals and individual entities (predominantly Wealth Management clients within AWM). Refer to Note 14 for more information on SPEs.

The following tables summarize the Firm's loan balances by portfolio segment.

December 31, 2020 (in millions)	Consumer, excluding credit card	Credit card	Wholesale	Total[b][c]
Retained	**$ 302,127**	**$ 143,432**	**$ 514,947**	**$ 960,506**
Held-for-sale	**1,305**	**784**	**5,784**	**7,873**
At fair value[a]	**15,147**	**–**	**29,327**	**44,474**
Total	**$ 318,579**	**$ 144,216**	**$ 550,058**	**$ 1,012,853**

December 31, 2019 (in millions)	Consumer, excluding credit card	Credit card	Wholesale	Total[b][c]
Retained	$ 294,999	$ 168,924	$ 481,678	$ 945,601
Held-for-sale	3,002	–	4,062	7,064
At fair value[a]	19,816	–	25,139	44,955
Total	$ 317,817	$ 168,924	$ 510,879	$ 997,620

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans. Prior-period amounts have been revised to conform with the current presentation.
(b) Excludes $2.9 billion of accrued interest receivables at both December 31, 2020 and 2019. The Firm wrote off accrued interest receivables of $121 million and $50 million for the years ended December 31, 2020 and 2019, respectively.
(c) Loans (other than those for which the fair value option has been elected) are presented net of unamortized discounts and premiums and net deferred loan fees or costs. These amounts were not material as of December 31, 2020 and 2019.

The following tables provide information about the carrying value of retained loans purchased, sold and reclassified to held-for-sale during the periods indicated. Loans that were reclassified to held-for-sale and sold in a subsequent period are excluded from the sales line of this table.

	2020			
Year ended December 31, (in millions)	Consumer, excluding credit card	Credit card	Wholesale	Total
Purchases	**$ 3,474** [b][c]	**$ –**	**$ 1,159**	**$ 4,633**
Sales	**352**	**–**	**17,916**	**18,268**
Retained loans reclassified to held-for-sale[a]	**2,084**	**787**	**1,580**	**4,451**

	2019			
Year ended December 31, (in millions)	Consumer, excluding credit card	Credit card	Wholesale	Total
Purchases	$ 1,282 [b][c]	$ –	$ 1,291	$ 2,573
Sales	30,474	–	23,445	53,919
Retained loans reclassified to held-for-sale[a]	9,188	–	2,371	11,559

	2018			
Year ended December 31, (in millions)	Consumer, excluding credit card	Credit card	Wholesale	Total
Purchases	$ 2,543 [b][c]	$ –	$ 2,354	$ 4,897
Sales	9,984	–	16,741	26,725
Retained loans reclassified to held-for-sale[a]	36	–	2,276	2,312

(a) Reclassifications of loans to held-for-sale are non-cash transactions.
(b) Predominantly includes purchases of residential real estate loans, including the Firm's voluntary repurchases of certain delinquent loans from loan pools as permitted by Government National Mortgage Association ("Ginnie Mae") guidelines for the years ended December 31, 2020, 2019 and 2018. The Firm typically elects to repurchase these delinquent loans as it continues to service them and/or manage the foreclosure process in accordance with applicable requirements of Ginnie Mae, FHA, RHS, and/or VA.
(c) Excludes purchases of retained loans sourced through the correspondent origination channel and underwritten in accordance with the Firm's standards. Such purchases were $15.3 billion, $16.6 billion and $18.6 billion for the years ended December 31, 2020, 2019 and 2018, respectively.

Gains and losses on sales of loans

Net gains/(losses) on sales of loans and lending-related commitments (including adjustments to record loans and lending-related commitments held-for-sale at the lower of cost or fair value) recognized in noninterest revenue was $(43) million for the year ended December 31, 2020 of which $(36) million was related to loans. Net gains on sales of loans was $394 million for the year ended December 31, 2019. Gains and losses on sales of loans was not material for the year ended December 31, 2018. In addition, the sale of loans may also result in write downs, recoveries or changes in the allowance recognized in the provision for credit losses.

Consumer, excluding credit card loan portfolio

Consumer loans, excluding credit card loans, consist primarily of scored residential mortgages, home equity loans and lines of credit, auto and business banking loans, with a focus on serving the prime consumer credit market. The portfolio also includes home equity loans secured by junior liens, prime mortgage loans with an interest-only payment period, and certain payment-option loans that may result in negative amortization.

The following table provides information about retained consumer loans, excluding credit card, by class.

December 31, (in millions)	2020	2019
Residential real estate	$ 225,302	$ 243,317
Auto and other[(a)]	76,825	51,682
Total retained loans	**$ 302,127**	$ 294,999

(a) At December 31, 2020, included $19.2 billion of loans in Business Banking under the PPP.

Delinquency rates are the primary credit quality indicator for consumer loans. Loans that are more than 30 days past due provide an early warning of borrowers who may be experiencing financial difficulties and/or who may be unable or unwilling to repay the loan. As the loan continues to age, it becomes more clear whether the borrower is likely to be unable or unwilling to pay. In the case of residential real estate loans, late-stage delinquencies (greater than 150 days past due) are a strong indicator of loans that will ultimately result in a foreclosure or similar liquidation transaction. In addition to delinquency rates, other credit quality indicators for consumer loans vary based on the class of loan, as follows:

- For residential real estate loans, the current estimated LTV ratio, or the combined LTV ratio in the case of junior lien loans, is an indicator of the potential loss severity in the event of default. Additionally, LTV or combined LTV ratios can provide insight into a borrower’s continued willingness to pay, as the delinquency rate of high-LTV loans tends to be greater than that for loans where the borrower has equity in the collateral. The geographic distribution of the loan collateral also provides insight as to the credit quality of the portfolio, as factors such as the regional economy, home price changes and specific events such as natural disasters, will affect credit quality. The borrower’s current or “refreshed” FICO score is a secondary credit quality indicator for certain loans, as FICO scores are an indication of the borrower’s credit payment history. Thus, a loan to a borrower with a low FICO score (less than 660) is considered to be of higher risk than a loan to a borrower with a higher FICO score. Further, a loan to a borrower with a high LTV ratio and a low FICO score is at greater risk of default than a loan to a borrower that has both a high LTV ratio and a high FICO score.
- For scored auto and business banking loans, geographic distribution is an indicator of the credit performance of the portfolio. Similar to residential real estate loans, geographic distribution provides insights into the portfolio performance based on regional economic activity and events.

Residential real estate

The following table provides information on delinquency, which is the primary credit quality indicator for retained residential real estate loans.

(in millions, except ratios)	December 31, 2020									December 31, 2019
	Term loans by origination year						Revolving loans			
	2020	2019	2018	2017	2016	Prior to 2016	Within the revolving period	Converted to term loans	Total	Total
Loan delinquency[(a)(b)]										
Current	**$ 55,562**	**$ 31,820**	**$ 13,900**	**$ 20,410**	**$ 27,978**	**$ 50,232**	**$ 7,370**	**$ 15,792**	**$223,064**	$239,979
30–149 days past due	**9**	**25**	**20**	**22**	**29**	**674**	**21**	**245**	**1,045**	1,910
150 or more days past due	**3**	**14**	**10**	**18**	**18**	**844**	**22**	**264**	**1,193**	1,428
Total retained loans	**$ 55,574**	**$ 31,859**	**$ 13,930**	**$ 20,450**	**$ 28,025**	**$ 51,750**	**$ 7,413**	**$ 16,301**	**$225,302**	$243,317
% of 30+ days past due to total retained loans[(c)]	**0.02 %**	**0.12 %**	**0.22 %**	**0.20 %**	**0.17 %**	**2.86 %**	**0.58 %**	**3.12 %**	**0.98 %**	1.35 %

(a) Individual delinquency classifications include mortgage loans insured by U.S. government agencies as follows: current included $36 million and $17 million; 30–149 days past due included $16 million and $20 million; and 150 or more days past due included $24 million and $26 million at December 31, 2020 and 2019, respectively.

(b) At December 31, 2020, loans under payment deferral programs offered in response to the COVID-19 pandemic which are still within their deferral period and performing according to their modified terms are generally not considered delinquent.

(c) At December 31, 2020 and 2019, residential real estate loans excluded mortgage loans insured by U.S. government agencies of $40 million and $46 million, respectively, that are 30 or more days past due. These amounts have been excluded based upon the government guarantee.

Approximately 35% of the total revolving loans are senior lien loans; the remaining balance are junior lien loans. The lien position the Firm holds is considered in the Firm’s allowance for credit losses. Revolving loans that have been converted to term loans have higher delinquency rates than those that are still within the revolving period. That is primarily because the fully-amortizing payment that is generally required for those products is higher than the minimum payment options available for revolving loans within the revolving period.

Nonaccrual loans and other credit quality indicators

The following table provides information on nonaccrual and other credit quality indicators for retained residential real estate loans.

(in millions, except weighted-average data)		**December 31, 2020**		December 31, 2019
Nonaccrual loans[(a)(b)(c)(d)(e)]	**$**	**5,313**	$	2,780
90 or more days past due and government guaranteed[(f)]		**33**		38
Current estimated LTV ratios[(g)(h)]				
Greater than 125% and refreshed FICO scores:				
Equal to or greater than 660	**$**	**10**	$	31
Less than 660		**18**		38
101% to 125% and refreshed FICO scores:				
Equal to or greater than 660		**72**		134
Less than 660		**65**		132
80% to 100% and refreshed FICO scores:				
Equal to or greater than 660		**2,365**		5,953
Less than 660		**435**		764
Less than 80% and refreshed FICO scores:				
Equal to or greater than 660		**208,457**		219,469
Less than 660		**12,072**		14,681
No FICO/LTV available		**1,732**		2,052
U.S. government-guaranteed		**76**		63
Total retained loans	**$**	**225,302**	$	243,317
Weighted average LTV ratio[(g)(i)]		**54 %**		55 %
Weighted average FICO[(h)(i)]		**763**		758
Geographic region[(j)]				
California	**$**	**73,444**	$	82,147
New York		**32,287**		31,996
Florida		**13,981**		13,668
Texas		**13,773**		14,474
Illinois		**13,130**		15,587
Colorado		**8,235**		8,447
Washington		**7,917**		8,990
New Jersey		**7,227**		7,752
Massachusetts		**5,784**		6,210
Connecticut		**5,024**		4,954
All other[(k)]		**44,500**		49,092
Total retained loans	**$**	**225,302**	$	243,317

(a) Includes collateral-dependent residential real estate loans that are charged down to the lower of amortized cost or the fair value of the underlying collateral less costs to sell. The Firm reports, in accordance with regulatory guidance, residential real estate loans that have been discharged under Chapter 7 bankruptcy and not reaffirmed by the borrower ("Chapter 7 loans") as collateral-dependent nonaccrual TDRs, regardless of their delinquency status. At December 31, 2020, approximately 7% of Chapter 7 residential real estate loans were 30 days or more past due, respectively.

(b) At December 31, 2020, nonaccrual loans included $1.6 billion of PCD loans. Prior to the adoption of CECL, nonaccrual loans excluded PCI loans as the Firm recognized interest income on each pool of PCI loans as each of the pools was performing.

(c) Generally, all consumer nonaccrual loans have an allowance. In accordance with regulatory guidance, certain nonaccrual loans that are considered collateral-dependent have been charged down to the lower of amortized cost or the fair value of their underlying collateral less costs to sell. If the value of the underlying collateral improves subsequent to the charge down, the related allowance may be negative.

(d) Interest income on nonaccrual loans recognized on a cash basis was $161 million and $166 million for the years ended December 31, 2020 and 2019, respectively.

(e) Generally excludes loans under payment deferral programs offered in response to the COVID-19 pandemic. Includes loans to customers that have exited COVID-19 payment deferral programs and are 90 or more days past due, predominantly all of which were also at least 150 days past due and therefore considered collateral-dependent. Collateral-dependent loans are charged down to the lower of amortized cost or fair value of the underlying collateral less costs to sell.

(f) These balances are excluded from nonaccrual loans as the loans are guaranteed by U.S government agencies. Typically the principal balance of the loans is insured and interest is guaranteed at a specified reimbursement rate subject to meeting agreed-upon servicing guidelines. At December 31, 2020 and 2019, these balances included $33 million and $34 million, respectively, of loans that are no longer accruing interest based on the agreed-upon servicing guidelines. For the remaining balance, interest is being accrued at the guaranteed reimbursement rate. There were no loans that were not guaranteed by U.S. government agencies that are 90 or more days past due and still accruing interest at December 31, 2020 and 2019.

(g) Represents the aggregate unpaid principal balance of loans divided by the estimated current property value. Current property values are estimated, at a minimum, quarterly, based on home valuation models using nationally recognized home price index valuation estimates incorporating actual data to the extent available and forecasted data where actual data is not available. Current estimated combined LTV for junior lien home equity loans considers all available lien positions, as well as unused lines, related to the property.

(h) Refreshed FICO scores represent each borrower's most recent credit score, which is obtained by the Firm on at least a quarterly basis.

(i) Excludes loans with no FICO and/or LTV data available.

(j) The geographic regions presented in the table are ordered based on the magnitude of the corresponding loan balances at December 31, 2020.

(k) At December 31, 2020 and 2019, included mortgage loans insured by U.S. government agencies of $76 million and $63 million, respectively. These amounts have been excluded from the geographic regions presented based upon the government guarantee.

Loan modifications

Modifications of residential real estate loans, where the Firm grants concessions to borrowers who are experiencing financial difficulty are generally accounted for and reported as TDRs. Loans with short-term or other insignificant modifications that are not considered concessions are not TDRs nor are loans for which the Firm has elected to apply the option to suspend the application of accounting guidance for TDRs as provided by the CARES Act and extended by the Consolidated Appropriations Act. The carrying value of new TDRs was $819 million, $490 million and $736 million for the years ended December 31, 2020, 2019 and 2018, respectively. There were no additional commitments to lend to borrowers whose residential real estate loans have been modified in TDRs.

Nature and extent of modifications

The Firm's proprietary modification programs as well as government programs, including U.S. GSE programs, generally provide various concessions to financially troubled borrowers including, but not limited to, interest rate reductions, term or payment extensions and delays of principal and/or interest payments that would otherwise have been required under the terms of the original agreement.

The following table provides information about how residential real estate loans were modified in TDRs under the Firm's loss mitigation programs described above during the periods presented. This table excludes Chapter 7 loans where the sole concession granted is the discharge of debt, loans with short-term or other insignificant modifications that are not considered concessions, and loans for which the Firm has elected to apply the option to suspend the application of accounting guidance for TDRs as provided by the CARES Act and extended by the Consolidated Appropriations Act.

Year ended December 31,	**2020**	2019	2018
Number of loans approved for a trial modification	**5,522**	5,872	7,175
Number of loans permanently modified	**6,850**	4,918	7,853
Concession granted:[(a)]			
Interest rate reduction	**50 %**	77 %	54 %
Term or payment extension	**49**	71	62
Principal and/or interest deferred	**14**	13	29
Principal forgiveness	**2**	5	7
Other[(b)]	**66**	63	51

(a) Represents concessions granted in permanent modifications as a percentage of the number of loans permanently modified. The sum of the percentages exceeds 100% because predominantly all of the modifications include more than one type of concession. Concessions offered on trial modifications are generally consistent with those granted on permanent modifications.

(b) Includes variable interest rate to fixed interest rate modifications and payment delays that meet the definition of a TDR for the years ended December 31, 2020, 2019 and 2018.

Financial effects of modifications and redefaults

The following table provides information about the financial effects of the various concessions granted in modifications of residential real estate loans under the loss mitigation programs described above and about redefaults of certain loans modified in TDRs for the periods presented. The following table presents only the financial effects of permanent modifications and do not include temporary concessions offered through trial modifications. This table also excludes Chapter 7 loans where the sole concession granted is the discharge of debt, loans with short-term or other insignificant modifications that are not considered concessions, and loans for which the Firm has elected to apply the option to suspend the application of accounting guidance for TDRs as provided by the CARES Act and extended by the Consolidated Appropriations Act.

Year ended December 31, (in millions, except weighted - average data)	2020	2019	2018
Weighted-average interest rate of loans with interest rate reductions – before TDR	**5.09 %**	5.68 %	5.50 %
Weighted-average interest rate of loans with interest rate reductions – after TDR	**3.28**	3.81	3.60
Weighted-average remaining contractual term (in years) of loans with term or payment extensions – before TDR	**22**	20	21
Weighted-average remaining contractual term (in years) of loans with term or payment extensions – after TDR	**39**	39	38
Charge-offs recognized upon permanent modification	**$ 5**	$ 1	$ 2
Principal deferred	**16**	19	30
Principal forgiven	**5**	7	17
Balance of loans that redefaulted within one year of permanent modification[(a)]	**$ 199**	$ 166	$ 161

(a) Represents loans permanently modified in TDRs that experienced a payment default in the periods presented, and for which the payment default occurred within one year of the modification. The dollar amounts presented represent the balance of such loans at the end of the reporting period in which such loans defaulted. For residential real estate loans modified in TDRs, payment default is deemed to occur when the loan becomes two contractual payments past due. In the event that a modified loan redefaults, it will generally be liquidated through foreclosure or another similar type of liquidation transaction. Redefaults of loans modified within the last twelve months may not be representative of ultimate redefault levels.

At December 31, 2020, the weighted-average estimated remaining lives of residential real estate loans permanently modified in TDRs were 6 years. The estimated remaining lives of these loans reflect estimated prepayments, both voluntary and involuntary (i.e., foreclosures and other forced liquidations).

Active and suspended foreclosure

At December 31, 2020 and 2019, the Firm had residential real estate loans, excluding those insured by U.S. government agencies, with a carrying value of $846 million and $1.2 billion, respectively, that were not included in REO, but were in the process of active or suspended foreclosure.

Auto and other

The following table provides information on delinquency, which is the primary credit quality indicator for retained auto and other consumer loans.

	December 31, 2020									December 31, 2019
	Term Loans by origination year						Revolving loans			
(in millions, except ratios)	2020	2019	2018	2017	2016	Prior to 2016	Within the revolving period	Converted to term loans	Total	Total
Loan delinquency[(a)]										
Current	**$46,169** [(b)]	**$12,829**	**$ 7,367**	**$ 4,521**	**$ 2,058**	**$ 742**	**$ 2,517**	**$ 158**	**$76,361**	$51,005
30–119 days past due	**97**	**107**	**77**	**53**	**42**	**23**	**30**	**17**	**446**	667
120 or more days past due	**–**	**–**	**–**	**1**	**–**	**1**	**8**	**8**	**18**	10
Total retained loans	**$46,266**	**$12,936**	**$ 7,444**	**$ 4,575**	**$ 2,100**	**$ 766**	**$ 2,555**	**$ 183**	**$76,825**	$51,682
% of 30+ days past due to total retained loans	**0.21 %**	**0.83 %**	**1.03 %**	**1.18 %**	**2.00 %**	**3.13 %**	**1.49 %**	**13.66 %**	**0.60 %**	1.31 %

(a) At December 31, 2020, loans under payment deferral programs offered in response to the COVID-19 pandemic which are still within their deferral period and performing according to their modified terms are generally not considered delinquent.
(b) At December 31, 2020, included $19.2 billion of loans in Business Banking under the PPP. PPP loans are guaranteed by the SBA. Other than in certain limited circumstances, the Firm typically does not recognize charge-offs, classify as nonaccrual nor record an allowance for loan losses on these loans.

Nonaccrual and other credit quality indicators

The following table provides information on nonaccrual and other credit quality indicators for retained auto and other consumer loans.

	Total Auto and other	
(in millions, except ratios)	**December 31, 2020**	December 31, 2019
Nonaccrual loans[(a)(b)(c)]	**151**	146
Geographic region[(d)]		
California	**$ 12,302**	$ 7,795
New York	**8,824**	3,706
Texas	**8,235**	5,457
Florida	**4,668**	3,025
Illinois	**3,768**	2,443
New Jersey	**2,646**	1,798
Arizona	**2,465**	1,347
Ohio	**2,163**	1,490
Pennsylvania	**1,924**	1,721
Colorado	**1,910**	1,247
All other	**27,920**	21,653
Total retained loans	**$ 76,825**	$ 51,682

(a) There were no loans that were 90 or more days past due and still accruing interest at December 31, 2020 and 2019.
(b) All nonaccrual auto and other consumer loans generally have an allowance. Certain nonaccrual loans that are considered collateral-dependent have been charged down to the lower of amortized cost or the fair value of their underlying collateral less costs to sell. If the value of the underlying collateral improves subsequent to the charge down, the related allowance may be negative.
(c) Interest income on nonaccrual loans recognized on a cash basis was not material for the years ended December 31, 2020 and 2019.
(d) The geographic regions presented in this table are ordered based on the magnitude of the corresponding loan balances at December 31, 2020.

Loan modifications

Certain other consumer loan modifications are considered to be TDRs as they provide various concessions to borrowers who are experiencing financial difficulty. Loans with short-term or other insignificant modifications that are not considered concessions are not TDRs.

The impact of these modifications, as well as new TDRs, were not material to the Firm for the years ended December 31, 2020, 2019 and 2018. Additional commitments to lend to borrowers whose loans have been modified in TDRs as of December 31, 2020 and 2019 were not material.

Credit card loan portfolio

The credit card portfolio segment includes credit card loans originated and purchased by the Firm. Delinquency rates are the primary credit quality indicator for credit card loans as they provide an early warning that borrowers may be experiencing difficulties (30 days past due); information on those borrowers that have been delinquent for a longer period of time (90 days past due) is also considered. In addition to delinquency rates, the geographic distribution of the loans provides insight as to the credit quality of the portfolio based on the regional economy.

While the borrower's credit score is another general indicator of credit quality, the Firm does not view credit scores as a primary indicator of credit quality because the borrower's credit score tends to be a lagging indicator. The distribution of such scores provides a general indicator of credit quality trends within the portfolio; however, the score does not capture all factors that would be predictive of future credit performance. Refreshed FICO score information, which is obtained at least quarterly, for a statistically significant random sample of the credit card portfolio is indicated in the following table. FICO is considered to be the industry benchmark for credit scores.

The Firm generally originates new card accounts to prime consumer borrowers. However, certain cardholders' FICO scores may decrease over time, depending on the performance of the cardholder and changes in the credit score calculation.

The following table provides information on delinquency, which is the primary credit quality indicator for retained credit card loans.

	December 31, 2020			December 31, 2019
(in millions, except ratios)	Within the revolving period	Converted to term loans[b]	Total	Total
Loan delinquency[a]				
Current and less than 30 days past due and still accruing	**$ 139,783**	**$ 1,239**	**$ 141,022**	$ 165,767
30–89 days past due and still accruing	**997**	**94**	**1,091**	1,550
90 or more days past due and still accruing	**1,277**	**42**	**1,319**	1,607
Total retained loans	**$ 142,057**	**$ 1,375**	**$ 143,432**	$ 168,924
Loan delinquency ratios				
% of 30+ days past due to total retained loans	**1.60 %**	**9.89 %**	**1.68 %**	1.87 %
% of 90+ days past due to total retained loans	**0.90**	**3.05**	**0.92**	0.95

(a) At December 31, 2020, loans under payment deferral programs offered in response to the COVID-19 pandemic which are still within their deferral period and performing according to their modified terms are generally not considered delinquent.
(b) Represents TDRs.

Other credit quality indicators
The following table provides information on other credit quality indicators for retained credit card loans.

(in millions, except ratios)	**December 31, 2020**	December 31, 2019
Geographic region[a]		
California	**$ 20,921**	$ 25,783
Texas	**14,544**	16,728
New York	**11,919**	14,544
Florida	**9,562**	10,830
Illinois	**8,006**	9,579
New Jersey	**5,927**	7,165
Ohio	**4,673**	5,406
Pennsylvania	**4,476**	5,245
Colorado	**4,092**	4,763
Michigan	**3,553**	4,164
All other	**55,759**	64,717
Total retained loans	**$ 143,432**	$ 168,924
Percentage of portfolio based on carrying value with estimated refreshed FICO scores		
Equal to or greater than 660	**85.9 %**	84.0 %
Less than 660	**13.9**	15.4
No FICO available	**0.2**	0.6

(a) The geographic regions presented in the table are ordered based on the magnitude of the corresponding loan balances at December 31, 2020.

Loan modifications

The Firm may offer one of a number of loan modification programs granting concessions to credit card borrowers who are experiencing financial difficulty. The Firm grants concessions for most of the credit card loans under long-term programs. These modifications involve placing the customer on a fixed payment plan, generally for 60 months, and typically include reducing the interest rate on the credit card. Substantially all modifications under the Firm's long-term programs are considered to be TDRs. Loans with short-term or other insignificant modifications that are not considered concessions are not TDRs.

If the cardholder does not comply with the modified payment terms, then the credit card loan continues to age and will ultimately be charged-off in accordance with the Firm's standard charge-off policy. In most cases, the Firm does not reinstate the borrower's line of credit.

Financial effects of modifications and redefaults

The following table provides information about the financial effects of the concessions granted on credit card loans modified in TDRs and redefaults for the periods presented. For all periods disclosed, new enrollments were less than 1% of total retained credit card loans.

Year ended December 31, (in millions, except weighted-average data)	**2020**	2019	2018
Balance of new TDRs[(a)]	**$ 818**	$ 961	$ 866
Weighted-average interest rate of loans – before TDR	**18.04 %**	19.07 %	17.98 %
Weighted-average interest rate of loans – after TDR	**4.64**	4.70	5.16
Balance of loans that redefaulted within one year of modification[(b)]	**$ 110**	$ 148	$ 116

(a) Represents the outstanding balance prior to modification.

(b) Represents loans modified in TDRs that experienced a payment default in the periods presented, and for which the payment default occurred within one year of the modification. The amounts presented represent the balance of such loans as of the end of the quarter in which they defaulted.

For credit card loans modified in TDRs, payment default is deemed to have occurred when the borrower misses two consecutive contractual payments. Defaulted modified credit card loans remain in the modification program and continue to be charged off in accordance with the Firm's standard charge-off policy.

Wholesale loan portfolio

Wholesale loans include loans made to a variety of clients, ranging from large corporate and institutional clients to high-net-worth individuals.

The primary credit quality indicator for wholesale loans is the internal risk rating assigned to each loan. Risk ratings are used to identify the credit quality of loans and differentiate risk within the portfolio. Risk ratings on loans consider the PD and the LGD. The PD is the likelihood that a loan will default. The LGD is the estimated loss on the loan that would be realized upon the default of the borrower and takes into consideration collateral and structural support for each credit facility.

Management considers several factors to determine an appropriate internal risk rating, including the obligor's debt capacity and financial flexibility, the level of the obligor's earnings, the amount and sources for repayment, the level and nature of contingencies, management strength, and the industry and geography in which the obligor operates. The Firm's internal risk ratings generally align with the qualitative characteristics (e.g., borrower capacity to meet financial commitments and vulnerability to changes in the economic environment) defined by S&P and Moody's, however the quantitative characteristics (e.g., PD and LGD) may differ as they reflect internal historical experiences and assumptions. The Firm generally considers internal ratings with qualitative characteristics equivalent to BBB-/Baa3 or higher as investment grade, and these ratings have a lower PD and/or lower LGD than non-investment grade ratings.

Noninvestment-grade ratings are further classified as noncriticized and criticized, and the criticized portion is further subdivided into performing and nonaccrual loans, representing management's assessment of the collectibility of principal and interest. Criticized loans have a higher PD than noncriticized loans. The Firm's definition of criticized aligns with the U.S. banking regulatory definition of criticized exposures, which consist of special mention, substandard and doubtful categories.

Risk ratings are reviewed on a regular and ongoing basis by Credit Risk Management and are adjusted as necessary for updated information affecting the obligor's ability to fulfill its obligations.

As noted above, the risk rating of a loan considers the industry in which the obligor conducts its operations. As part of the overall credit risk management framework, the Firm focuses on the management and diversification of its industry and client exposures, with particular attention paid to industries with actual or potential credit concern. Refer to Note 4 for further detail on industry concentrations.

The following tables provide information on internal risk rating, which is the primary credit quality indicator for retained wholesale loans.

December 31, (in millions, except ratios)	Secured by real estate 2020	Secured by real estate 2019	Commercial and industrial 2020	Commercial and industrial 2019	Other[b] 2020	Other[b] 2019	Total retained loans 2020	Total retained loans 2019
Loans by risk ratings								
Investment-grade	**$ 90,147**	$ 96,611	**$ 71,917**[a]	$ 80,489	**$ 217,209**	$ 186,344	**$ 379,273**[a]	$ 363,444
Noninvestment- grade:								
Noncriticized	**26,129**	22,493	**57,870**	60,437	**33,053**	27,591	**117,052**	110,521
Criticized performing	**3,234**	1,131	**10,991**	4,399	**1,079**	1,126	**15,304**	6,656
Criticized nonaccrual	**483**	183	**1,931**	844	**904**	30	**3,318**	1,057
Total noninvestment- grade	**29,846**	23,807	**70,792**	65,680	**35,036**	28,747	**135,674**	118,234
Total retained loans	**$ 119,993**	$ 120,418	**$ 142,709**	$ 146,169	**$ 252,245**	$ 215,091	**$ 514,947**	$ 481,678
% of investment-grade to total retained loans	**75.13 %**	80.23 %	**50.39 %**	55.07 %	**86.11 %**	86.63 %	**73.65 %**	75.45 %
% of total criticized to total retained loans	**3.10**	1.09	**9.05**	3.59	**0.79**	0.54	**3.62**	1.60
% of criticized nonaccrual to total retained loans	**0.40**	0.15	**1.35**	0.58	**0.36**	0.01	**0.64**	0.22

Secured by real estate

(in millions)	December 31, 2020 — Term loans by origination year 2020	2019	2018	2017	2016	Prior to 2016	Revolving loans — Within the revolving period	Revolving loans — Converted to term loans	Total	December 31, 2019 Total
Loans by risk ratings										
Investment-grade	**$ 16,560**	**$ 19,575**	**$ 12,192**	**$ 11,017**	**$ 13,439**	**$ 16,266**	**$ 1,098**	**$ –**	**$ 90,147**	$ 96,611
Noninvestment-grade	**3,327**	**4,339**	**4,205**	**2,916**	**2,575**	**11,994**	**489**	**1**	**29,846**	23,807
Total retained loans	**$ 19,887**	**$ 23,914**	**$ 16,397**	**$ 13,933**	**$ 16,014**	**$ 28,260**	**$ 1,587**	**$ 1**	**$ 119,993**	$ 120,418

Commercial and industrial

(in millions)	December 31, 2020 — Term loans by origination year 2020	2019	2018	2017	2016	Prior to 2016	Revolving loans — Within the revolving period	Revolving loans — Converted to term loans	Total	December 31, 2019 Total
Loans by risk ratings										
Investment-grade	**$ 21,211**[a]	**$ 7,304**	**$ 2,934**	**$ 1,748**	**$ 1,032**	**$ 1,263**	**$ 36,424**	**$ 1**	**$ 71,917**	$ 80,489
Noninvestment-grade	**15,060**	**8,636**	**5,131**	**2,104**	**497**	**2,439**	**36,852**	**73**	**70,792**	65,680
Total retained loans	**$ 36,271**	**$ 15,940**	**$ 8,065**	**$ 3,852**	**$ 1,529**	**$ 3,702**	**$ 73,276**	**$ 74**	**$ 142,709**	$ 146,169

Other[b]

(in millions)	December 31, 2020 — Term loans by origination year 2020	2019	2018	2017	2016	Prior to 2016	Revolving loans — Within the revolving period	Revolving loans — Converted to term loans	Total	December 31, 2019 Total
Loans by risk ratings										
Investment-grade	**$ 31,389**	**$ 10,169**	**$ 6,994**	**$ 6,206**	**$ 3,553**	**$ 12,595**	**$ 145,524**	**$ 779**	**$ 217,209**	$ 186,344
Noninvestment-grade	**5,009**	**2,220**	**1,641**	**550**	**146**	**636**	**24,710**	**124**	**35,036**	28,747
Total retained loans	**$ 36,398**	**$ 12,389**	**$ 8,635**	**$ 6,756**	**$ 3,699**	**$ 13,231**	**$ 170,234**	**$ 903**	**$ 252,245**	$ 215,091

(a) At December 31, 2020, included $8.0 billion of loans under the PPP, of which $7.4 billion is included in commercial and industrial. PPP loans are guaranteed by the SBA and considered investment-grade. Other than in certain limited circumstances, the Firm typically does not recognize charge-offs, classify as nonaccrual nor record an allowance for loan losses on these loans.

(b) Includes loans to financial institutions, states and political subdivisions, SPEs, nonprofits, personal investment companies and trusts, as well as loans to individuals and individual entities (predominantly Wealth Management clients within AWM). Refer to Note 14 for more information on SPEs.

The following table presents additional information on retained loans secured by real estate within the Wholesale portfolio, which consists of loans secured wholly or substantially by a lien or liens on real property at origination. Multifamily lending includes financing for acquisition, leasing and construction of apartment buildings. Other commercial lending largely includes financing for acquisition, leasing and construction, largely for office, retail and industrial real estate. Included in secured by real estate loans is $6.4 billion and $6.3 billion as of December 31, 2020 and 2019, respectively, of construction and development loans made to finance land development and on-site construction of commercial, industrial, residential, or farm buildings.

December 31, (in millions, except ratios)	Multifamily		Other Commercial		Total retained loans secured by real estate	
	2020	2019	**2020**	2019	**2020**	2019
Retained loans secured by real estate	**$ 73,078**	$ 73,840	**$ 46,915**	$ 46,578	**$ 119,993**	$ 120,418
Criticized	**1,144**	340	**2,573**	974	**3,717**	1,314
% of total criticized to total retained loans secured by real estate	**1.57 %**	0.46 %	**5.48 %**	2.09 %	**3.10 %**	1.09 %
Criticized nonaccrual	**$ 56**	$ 28	**$ 427**	$ 155	**$ 483**	$ 183
% of criticized nonaccrual loans to total retained loans secured by real estate	**0.08 %**	0.04 %	**0.91 %**	0.33 %	**0.40 %**	0.15 %

The following table provides additional information about retained wholesale loans, including geographic distribution, delinquency and net charge-offs.

December 31, (in millions)	Secured by real estate		Commercial and industrial		Other		Total retained loans	
	2020	2019	**2020**	2019	**2020**	2019	**2020**	2019
Loans by geographic distribution[(a)]								
Total U.S.	**$116,990**	$117,836	**$109,273**	$111,954	**$180,583**	$150,512	**$406,846**	$380,302
Total non-U.S.	**3,003**	2,582	**33,436**	34,215	**71,662**	64,579	**108,101**	101,376
Total retained loans	**$119,993**	$120,418	**$142,709**	$146,169	**$252,245**	$215,091	**$514,947**	$481,678
Loan delinquency[(b)]								
Current and less than 30 days past due and still accruing	**$118,894**	$120,119	**$140,100**	$144,839	**$249,713**	$214,641	**$508,707**	$479,599
30–89 days past due and still accruing	**601**	115	**658**	449	**1,606**	415	**2,865**	979
90 or more days past due and still accruing[(c)]	**15**	1	**20**	37	**22**	5	**57**	43
Criticized nonaccrual	**483**	183	**1,931**	844	**904**	30	**3,318**	1,057
Total retained loans	**$119,993**	$120,418	**$142,709**	$146,169	**$252,245**	$215,091	**$514,947**	$481,678
Net charge-offs/(recoveries)	**$ 10**	$ 44	**$ 737**	$ 335	**$ 52**	$ 36	**$ 799**	$ 415
% of net charge-offs/(recoveries) to end-of-period retained loans	**0.01 %**	0.04 %	**0.52 %**	0.23 %	**0.02 %**	0.02 %	**0.16 %**	0.09 %

(a) The U.S. and non-U.S. distribution is determined based predominantly on the domicile of the borrower.
(b) The credit quality of wholesale loans is assessed primarily through ongoing review and monitoring of an obligor's ability to meet contractual obligations rather than relying on the past due status, which is generally a lagging indicator of credit quality. Generally excludes loans under payment deferral programs offered in response to the COVID-19 pandemic.
(c) Represents loans that are considered well-collateralized and therefore still accruing interest.

Nonaccrual loans

The following table provides information on retained wholesale nonaccrual loans.

December 31, (in millions)	Secured by real estate		Commercial and industrial		Other		Total retained loans	
	2020	2019	**2020**	2019	**2020**	2019	**2020**	2019
Nonaccrual loans[(a)]								
With an allowance	**$ 351**	$ 169	**$ 1,667**	$ 688	**$ 800**	$ 28	**$ 2,818**	$ 885
Without an allowance[(b)]	**132**	14	**264**	156	**104**	2	**500**	172
Total nonaccrual loans[(c)]	**$ 483**	$ 183	**$ 1,931**	$ 844	**$ 904**	$ 30	**$ 3,318**	$ 1,057

(a) Loans that were modified in response to the COVID-19 pandemic continue to be risk-rated in accordance with the Firm's overall credit risk management framework. As of December 31, 2020, predominantly all of these loans were considered performing.
(b) When the discounted cash flows, collateral value or market price equals or exceeds the amortized cost of the loan, the loan does not require an allowance. This typically occurs when the loans have been partially charged off and/or there have been interest payments received and applied to the loan balance.
(c) Interest income on nonaccrual loans recognized on a cash basis were not material for the years ended December 31, 2020 and 2019.

Loan modifications

Certain loan modifications are considered to be TDRs as they provide various concessions to borrowers who are experiencing financial difficulty. Loans with short-term or other insignificant modifications that are not considered concessions are not TDRs nor are loans for which the Firm has elected to apply the option to suspend the application of accounting guidance for TDRs as provided by the CARES Act and extended by the Consolidated Appropriations Act. The carrying value of TDRs was $954 million and $501 million as of December 31, 2020 and 2019, respectively. The carrying value of new TDRs was $734 million, $407 million and $718 million for the years ended December 31, 2020, 2019 and 2018, respectively. The impact of these modifications, as well as new TDRs, were not material to the Firm for the years ended December 31, 2020, 2019 and 2018.

Note 13 – Allowance for credit losses

Effective January 1, 2020, the Firm adopted the CECL accounting guidance. The adoption of this guidance established a single allowance framework for all financial assets measured at amortized cost and certain off-balance sheet credit exposures. This framework requires that management's estimate reflects credit losses over the instrument's remaining expected life and considers expected future changes in macroeconomic conditions. Refer to Note 1 for further information.

JPMorgan Chase's allowance for credit losses comprises:

- the allowance for loan losses, which covers the Firm's retained loan portfolios (scored and risk-rated) and is presented separately on the Consolidated balance sheets,
- the allowance for lending-related commitments, which is presented on the Consolidated balance sheets in accounts payable and other liabilities, and
- the allowance for credit losses on investment securities, which covers the Firm's HTM and AFS securities and is recognized within Investment Securities on the Consolidated balance sheets.

The income statement effect of all changes in the allowance for credit losses is recognized in the provision for credit losses.

Determining the appropriateness of the allowance for credit losses is complex and requires significant judgment by management about the effect of matters that are inherently uncertain. At least quarterly, the allowance for credit losses is reviewed by the CRO, the CFO and the Controller of the Firm. Subsequent evaluations of credit exposures, considering the macroeconomic conditions, forecasts and other factors then prevailing, may result in significant changes in the allowance for credit losses in future periods.

The Firm's policies used to determine its allowance for loan losses and its allowance for lending-related commitments are described in the following paragraphs. Refer to Note 10 for a description of the policies used to determine the allowance for credit losses on investment securities.

Methodology for allowances for loan losses and lending-related commitments

The allowance for loan losses and allowance for lending-related commitments represents expected credit losses over the remaining expected life of retained loans and lending-related commitments that are not unconditionally cancellable. The Firm does not record an allowance for future draws on unconditionally cancellable lending-related commitments (e.g., credit cards). Expected losses related to accrued interest on credit card loans and certain performing, modified loans to borrowers impacted by COVID-19 are considered in the Firm's allowance for loan losses. However, the Firm does not record an allowance on other accrued interest receivables, due to its policy to write these receivables off no later than 90 days past due by reversing interest income.

The expected life of each instrument is determined by considering its contractual term, expected prepayments, cancellation features, and certain extension and call options. The expected life of funded credit card loans is generally estimated by considering expected future payments on the credit card account, and determining how much of those amounts should be allocated to repayments of the funded loan balance (as of the balance sheet date) versus other account activity. This allocation is made using an approach that incorporates the payment application requirements of the Credit Card Accountability Responsibility and Disclosure Act of 2009, generally paying down the highest interest rate balances first.

The estimate of expected credit losses includes expected recoveries of amounts previously charged off or expected to be charged off, even if such recoveries result in a negative allowance.

Collective and Individual Assessments

When calculating the allowance for loan losses and the allowance for lending-related commitments, the Firm assesses whether exposures share similar risk characteristics. If similar risk characteristics exist, the Firm estimates expected credit losses collectively, considering the risk associated with a particular pool and the probability that the exposures within the pool will deteriorate or default. The assessment of risk characteristics is subject to significant management judgment. Emphasizing one characteristic over another or considering additional characteristics could affect the allowance.

- Relevant risk characteristics for the consumer portfolio include product type, delinquency status, current FICO scores, geographic distribution, and, for collateralized loans, current LTV ratios.
- Relevant risk characteristics for the wholesale portfolio include LOB, geography, risk rating, delinquency status, level and type of collateral, industry, credit enhancement, product type, facility purpose, tenor, and payment terms.

The majority of the Firm's credit exposures share risk characteristics with other similar exposures, and as a result are collectively assessed for impairment ("portfolio-based component"). The portfolio-based component covers consumer loans, performing risk-rated loans and certain lending-related commitments.

If an exposure does not share risk characteristics with other exposures, the Firm generally estimates expected credit losses on an individual basis, considering expected repayment and conditions impacting that individual exposure ("asset-specific component"). The asset-specific component covers modified PCD loans, loans modified or reasonably expected to be modified in a TDR, collateral-dependent loans, as well as, risk-rated loans that have been placed on nonaccrual status.

Portfolio-based component

The portfolio-based component begins with a quantitative calculation that considers the likelihood of the borrower changing delinquency status or moving from one risk rating to another. The quantitative calculation covers expected credit losses over an instrument's expected life and is estimated by applying credit loss factors to the Firm's estimated exposure at default. The credit loss factors incorporate the probability of borrower default as well as loss severity in the event of default. They are derived using a weighted average of five internally developed macroeconomic scenarios over an eight-quarter forecast period, followed by a single year straight-line interpolation to revert to long run historical information for periods beyond the eight-quarter forecast period. The five macroeconomic scenarios consist of a central, relative adverse, extreme adverse, relative upside and extreme upside scenario, and are updated by the Firm's central forecasting team. The scenarios take into consideration the Firm's overarching economic outlook, internal perspectives from subject matter experts across the Firm, and market consensus and involve a governed process that incorporates feedback from senior management across LOBs, Corporate Finance and Risk Management.

The COVID-19 pandemic has stressed many MEVs to degrees not experienced in recent history, which has created additional challenges in the use of modeled credit loss estimates and increased the reliance on management judgment. In periods where certain MEVs are outside the range of historical experience on which the Firm's models have been trained, the Firm makes adjustments to appropriately address these economic circumstances. The Firm also considers the impact of other events, such as government unemployment benefits or other stimulus programs, when determining whether adjustments are necessary.

The quantitative calculation is adjusted to take into consideration model imprecision, emerging risk assessments, trends and other subjective factors that are not yet reflected in the calculation. These adjustments are accomplished in part by analyzing the historical loss experience, including during stressed periods, for each major product or model. Management applies judgment in making this adjustment, including taking into account uncertainties associated with the economic and political conditions, quality of underwriting standards, borrower behavior, credit concentrations or deterioration within an industry, product or portfolio, as well as other relevant internal and external factors affecting the credit quality of the portfolio. In certain instances, the interrelationships between these factors create further uncertainties.

Throughout 2020, the Firm made adjustments to its quantitative calculation which placed significant weighting on its adverse scenarios, as a result of continued uncertainty related to the COVID-19 pandemic.

The application of different inputs into the quantitative calculation, and the assumptions used by management to adjust the quantitative calculation, are subject to significant management judgment, and emphasizing one input or assumption over another, or considering other inputs or assumptions, could affect the estimate of the allowance for loan losses and the allowance for lending-related commitments.

Asset-specific component

To determine the asset-specific component of the allowance, collateral-dependent loans (including those loans for which foreclosure is probable) and larger, nonaccrual risk-rated loans in the wholesale portfolio segment are generally evaluated individually, while smaller loans (both scored and risk-rated) are aggregated for evaluation using factors relevant for the respective class of assets.

The Firm generally measures the asset-specific allowance as the difference between the amortized cost of the loan and the present value of the cash flows expected to be collected, discounted at the loan's original effective interest rate. Subsequent changes in impairment are generally recognized as an adjustment to the allowance for loan losses. For collateral-dependent loans, the fair value of collateral less estimated costs to sell is used to determine the charge-off amount for declines in value (to reduce the amortized cost of the loan to the fair value of collateral) or the amount of negative allowance that should be recognized (for recoveries of prior charge-offs associated with improvements in the fair value of collateral).

The asset-specific component of the allowance for loan losses for loans that have been or are expected to be modified in TDRs incorporates the effect of the modification on the loan's expected cash flows (including forgone interest, principal forgiveness, as well as other concessions), and also the potential for redefault. For residential real estate loans modified in or expected to be modified in TDRs, the Firm develops product-specific probability of default estimates, which are applied at a loan level to compute expected losses. In developing these probabilities of default, the Firm considers the relationship between the credit quality characteristics of the underlying loans and certain assumptions about housing prices and unemployment, based upon industry-wide data. The Firm also considers its own historical loss experience to-date based on actual redefaulted modified loans. For credit card loans modified in or expected to be modified in TDRs, expected losses incorporate projected delinquencies and charge-offs based on the Firm's historical experience by type of modification program. For wholesale loans modified or expected to be modified in TDRs, expected losses incorporate management's expectation of the borrower's ability to repay under the modified terms.

Estimating the timing and amounts of future cash flows is highly judgmental as these cash flow projections rely upon estimates such as loss severities, asset valuations, default rates (including redefault rates on modified loans), the amounts and timing of interest or principal payments (including any expected prepayments) or other factors that are reflective of current and expected market conditions. These estimates are, in turn, dependent on factors such as the duration of current overall economic conditions, industry-, portfolio-, or borrower-specific factors, the expected outcome of insolvency proceedings as well as, in certain circumstances, other economic factors. All of these estimates and assumptions require significant management judgment and certain assumptions are highly subjective.

Allowance for credit losses and related information

The table below summarizes information about the allowances for loan losses and lending-related commitments, and includes a breakdown of loans and lending-related commitments by impairment methodology. Refer to Note 10 for further information on the allowance for credit losses on investment securities.

The adoption of the CECL accounting guidance resulted in a change in the accounting for PCI loans, which are considered PCD loans. In conjunction with the adoption of CECL, the Firm reclassified risk-rated loans and lending-related commitments from the consumer, excluding credit card portfolio segment to the wholesale portfolio segment, to align with the methodology applied when determining the allowance. Prior-period amounts have been revised to conform with the current presentation. Refer to Note 1 for further information.

(Table continued on next page)

Year ended December 31, (in millions)	2020[e]			
	Consumer, excluding credit card	Credit card	Wholesale	Total
Allowance for loan losses				
Beginning balance at January 1,	$ 2,538	$ 5,683	$ 4,902	$ 13,123
Cumulative effect of a change in accounting principle	297	5,517	(1,642)	4,172
Gross charge-offs	805	5,077	954	6,836
Gross recoveries collected	(631)	(791)	(155)	(1,577)
Net charge-offs	174	4,286	799	5,259
Write-offs of PCI loans[a]	NA	NA	NA	NA
Provision for loan losses	974	10,886	4,431	16,291
Other	1	–	–	1
Ending balance at December 31,	$ 3,636	$ 17,800	$ 6,892	$ 28,328
Allowance for lending-related commitments				
Beginning balance at January 1,	$ 12	$ –	$ 1,179	$ 1,191
Cumulative effect of a change in accounting principle	133	–	(35)	98
Provision for lending-related commitments	42	–	1,079	1,121
Other	–	–	(1)	(1)
Ending balance at December 31,	$ 187	$ –	$ 2,222	$ 2,409
Total allowance for credit losses	$ 3,823	$ 17,800	$ 9,114	$ 30,737
Allowance for loan losses by impairment methodology				
Asset-specific[b]	$ (7)	$ 633	$ 682	$ 1,308
Portfolio-based	3,643	17,167	6,210	27,020
PCI	NA	NA	NA	NA
Total allowance for loan losses	$ 3,636	$ 17,800	$ 6,892	$ 28,328
Loans by impairment methodology				
Asset-specific[b]	$ 16,648	$ 1,375	$ 3,606	$ 21,629
Portfolio-based	285,479	142,057	511,341	938,877
PCI	NA	NA	NA	NA
Total retained loans	$ 302,127	$ 143,432	$ 514,947	$ 960,506
Collateral-dependent loans				
Net charge-offs	$ 133	$ –	$ 76	$ 209
Loans measured at fair value of collateral less cost to sell	4,956	–	188	5,144
Allowance for lending-related commitments by impairment methodology				
Asset-specific	$ –	$ –	$ 114	$ 114
Portfolio-based	187	–	2,108	2,295
Total allowance for lending-related commitments[c]	$ 187	$ –	$ 2,222	$ 2,409
Lending-related commitments by impairment methodology				
Asset-specific	$ –	$ –	$ 577	$ 577
Portfolio-based[d]	37,783	–	426,871	464,654
Total lending-related commitments	$ 37,783	$ –	$ 427,448	$ 465,231

(a) Prior to the adoption of CECL, write-offs of PCI loans were recorded against the allowance for loan losses when actual losses for a pool exceeded estimated losses that were recorded as purchase accounting adjustments at the time of acquisition. A write-off of a PCI loan was recognized when the underlying loan was removed from a pool.
(b) Includes modified PCD loans and loans that have been modified or are reasonably expected to be modified in a TDR. Also includes risk-rated loans that have been placed on nonaccrual status for the wholesale portfolio segment. The asset-specific credit card allowance for loans modified, or reasonably expected to be modified, in a TDR is calculated based on the loans' original contractual interest rates and does not consider any incremental penalty rates.
(c) The allowance for lending-related commitments is reported in accounts payable and other liabilities on the Consolidated balance sheets.
(d) At December 31, 2020, 2019 and 2018, lending-related commitments excluded $19.5 billion, $9.8 billion and $8.7 billion, respectively, for the consumer, excluding credit card portfolio segment; $658.5 billion, $650.7 billion and $605.4 billion, respectively, for the credit card portfolio segment; and $22.4 billion, $24.1 billion and $24.8 billion, respectively, for the wholesale portfolio segment, which were not subject to the allowance for lending-related commitments.
(e) Excludes HTM securities, which had an allowance for credit losses of $78 million and a provision for credit losses of $68 million as of and for the year ended December 31, 2020.

(table continued from previous page)

2019				2018			
Consumer, excluding credit card	Credit card	Wholesale	Total	Consumer, excluding credit card	Credit card	Wholesale	Total
$ 3,434	$ 5,184	$ 4,827	$ 13,445	$ 3,892	$ 4,884	$ 4,828	$ 13,604
NA	NA	NA	NA	NA	NA	NA	NA
902	5,436	472	6,810	977	5,011	361	6,349
(536)	(588)	(57)	(1,181)	(827)	(493)	(173)	(1,493)
366	4,848	415	5,629	150	4,518	188	4,856
151	–	–	151	187	–	–	187
(378)	5,348	479	5,449	(121)	4,818	188	4,885
(1)	(1)	11	9	–	–	(1)	(1)
$ 2,538	$ 5,683	$ 4,902	$ 13,123	$ 3,434	$ 5,184	$ 4,827	$ 13,445
$ 12	$ –	$ 1,043	$ 1,055	$ 12	$ –	$ 1,056	$ 1,068
NA	NA	NA	NA	NA	NA	NA	NA
–	–	136	136	–	–	(14)	(14)
–	–	–	–	–	–	1	1
$ 12	$ –	$ 1,179	$ 1,191	$ 12	$ –	$ 1,043	$ 1,055
$ 2,550	$ 5,683	$ 6,081	$ 14,314	$ 3,446	$ 5,184	$ 5,870	$ 14,500
$ 75	$ 477	$ 295	$ 847	$ 143	$ 440	$ 350	$ 933
1,476	5,206	4,607	11,289	1,503	4,744	4,477	10,724
987	–	–	987	1,788	–	–	1,788
$ 2,538	$ 5,683	$ 4,902	$ 13,123	$ 3,434	$ 5,184	$ 4,827	$ 13,445
$ 5,961	$ 1,452	$ 1,123	$ 8,536	$ 6,665	$ 1,319	$ 1,459	$ 9,443
268,675	167,472	480,555	916,702	305,077	155,297	475,561	935,935
20,363	–	–	20,363	24,034	–	3	24,037
$ 294,999	$ 168,924	$ 481,678	$ 945,601	$ 335,776	$ 156,616	$ 477,023	$ 969,415
$ 46	$ –	$ 36	$ 82	$ 16	$ –	$ 29	$ 45
2,053	–	87	2,140	2,076	–	206	2,282
$ –	$ –	$ 102	$ 102	$ –	$ –	$ 99	$ 99
12	–	1,077	1,089	12	–	944	956
$ 12	$ –	$ 1,179	$ 1,191	$ 12	$ –	$ 1,043	$ 1,055
$ –	$ –	$ 474	$ 474	$ –	$ –	$ 469	$ 469
30,417	–	392,967	423,384	26,502	–	374,996	401,498
$ 30,417	$ –	$ 393,441	$ 423,858	$ 26,502	$ –	$ 375,465	$ 401,967

Discussion of changes in the allowance during 2020
The increase in the allowance for loan losses and lending-related commitments was primarily driven by an increase in the provision for credit losses, reflecting the deterioration in and uncertainty around the future macroeconomic environment as a result of the impact of the COVID-19 pandemic.

As of December 31, 2020, the Firm's central case reflected U.S. unemployment rates of approximately 7% through the second quarter of 2021 and remaining above 5% until the second half of 2022. This compared with relatively low levels of unemployment of approximately 4% throughout 2020 and 2021 in the Firm's January 1, 2020 central case.

Further, while the Firm's January 1, 2020 central case U.S. GDP forecast reflected a 1.7% expansion in 2020, actual U.S. GDP contracted approximately 2.5% in 2020. As of December 31, 2020, the Firm's central case assumptions reflect a return to pre-pandemic GDP levels in the fourth quarter of 2021.

Due to elevated uncertainty in the near term outlook, driven by the potential for increased infection rates and related lock downs resulting from the pandemic, as well as the prospect that government and other consumer relief measures set to expire may not be extended, the Firm has placed significant weighting on its adverse scenarios. These scenarios incorporate more punitive macroeconomic factors than the central case assumptions, resulting in weighted average U.S. unemployment rates remaining elevated throughout 2021 and 2022, ending the fourth quarter of 2022 at approximately 6%, and in U.S. GDP ending 2022 approximately 0.9% higher than fourth quarter 2019 actual pre-pandemic levels.

The Firm's central case assumptions reflected U.S. unemployment rates and U.S. real GDP as follows:

	Assumptions at January 1, 2020		
	2Q20	4Q20[b]	2Q21
U.S. unemployment rate[a]	3.7%	3.8%	4.0%
Cumulative change in U.S. real GDP from 12/31/2019	0.9%	1.7%	2.4%

	Assumptions at December 31, 2020		
	2Q21	4Q21	2Q22
U.S. unemployment rate[a]	6.8%	5.7%	5.1%
Cumulative change in U.S. real GDP from 12/31/2019	(1.9)%	0.6%	2.0%

(a) Reflects quarterly average of forecasted U.S. unemployment rate.
(b) 4Q20 actual U.S. unemployment rate (quarterly average) was 6.8%. 4Q20 actual cumulative change in U.S. real GDP from 4Q19 was (2.5%).

Subsequent changes to this forecast and related estimates will be reflected in the provision for credit losses in future periods.

Note 14 – Variable interest entities

Refer to Note 1 on page 167 for a further description of JPMorgan Chase's accounting policies regarding consolidation of VIEs.

The following table summarizes the most significant types of Firm-sponsored VIEs by business segment. The Firm considers a "sponsored" VIE to include any entity where: (1) JPMorgan Chase is the primary beneficiary of the structure; (2) the VIE is used by JPMorgan Chase to securitize Firm assets; (3) the VIE issues financial instruments with the JPMorgan Chase name; or (4) the entity is a JPMorgan Chase–administered asset-backed commercial paper conduit.

Line of Business	*Transaction Type*	*Activity*	*2020 Form 10-K page references*
CCB	Credit card securitization trusts	Securitization of originated credit card receivables	253-254
	Mortgage securitization trusts	Servicing and securitization of both originated and purchased residential mortgages	254-256
CIB	Mortgage and other securitization trusts	Securitization of both originated and purchased residential and commercial mortgages, and other consumer loans	254-256
	Multi-seller conduits	Assist clients in accessing the financial markets in a cost-efficient manner and structures transactions to meet investor needs	256
	Municipal bond vehicles	Financing of municipal bond investments	256-257

The Firm's other business segments are also involved with VIEs (both third-party and Firm-sponsored), but to a lesser extent, as follows:

- Asset & Wealth Management: AWM sponsors and manages certain funds that are deemed VIEs. As asset manager of the funds, AWM earns a fee based on assets managed; the fee varies with each fund's investment objective and is competitively priced. For fund entities that qualify as VIEs, AWM's interests are, in certain cases, considered to be significant variable interests that result in consolidation of the financial results of these entities.
- Commercial Banking: CB provides financing and lending-related services to a wide spectrum of clients, including certain third-party-sponsored entities that may meet the definition of a VIE. CB does not control the activities of these entities and does not consolidate these entities. CB's maximum loss exposure, regardless of whether the entity is a VIE, is generally limited to loans and lending-related commitments which are reported and disclosed in the same manner as any other third-party transaction.
- Corporate: Corporate is involved with entities that may meet the definition of VIEs; however these entities are generally subject to specialized investment company accounting, which does not require the consolidation of investments, including VIEs. In addition, Treasury and CIO invest in securities generally issued by third parties which may meet the definition of VIEs (e.g., issuers of asset-backed securities). In general, the Firm does not have the power to direct the significant activities of these entities and therefore does not consolidate these entities. Refer to Note 10 for further information on the Firm's investment securities portfolio.

In addition, CIB also invests in and provides financing and other services to VIEs sponsored by third parties. Refer to page 258 of this Note for more information on the VIEs sponsored by third parties.

Significant Firm-sponsored variable interest entities

Credit card securitizations

CCB's Card business may securitize originated credit card loans, primarily through the Chase Issuance Trust (the "Trust"). The Firm's continuing involvement in credit card securitizations includes servicing the receivables, retaining an undivided seller's interest in the receivables, retaining certain senior and subordinated securities and maintaining escrow accounts.

The Firm consolidates the assets and liabilities of its sponsored credit card trusts as it is considered to be the primary beneficiary of these securitization trusts based on the Firm's ability to direct the activities of these VIEs through its servicing responsibilities and other duties, including making decisions as to the receivables that are transferred into those trusts and as to any related modifications and workouts. Additionally, the nature and extent of the Firm's other continuing involvement with the trusts, as indicated above, obligates the Firm to absorb losses and gives the Firm the right to receive certain benefits from these VIEs that could potentially be significant.

The underlying securitized credit card receivables and other assets of the securitization trusts are available only for payment of the beneficial interests issued by the securitization trusts; they are not available to pay the Firm's other obligations or the claims of the Firm's creditors.

The agreements with the credit card securitization trusts require the Firm to maintain a minimum undivided interest in the credit card trusts (generally 5%). As of December 31, 2020 and 2019, the Firm held undivided interests in Firm-sponsored credit card securitization trusts of $5.4 billion and $5.3 billion, respectively. The Firm maintained an average undivided interest in principal receivables owned by those trusts of approximately 39% and 50% for the years ended December 31, 2020 and

2019. The Firm did not retain any senior securities and retained $1.5 billion and $3.0 billion of subordinated securities in certain of its credit card securitization trusts as of December 31, 2020 and 2019, respectively. The Firm's undivided interests in the credit card trusts and securities retained are eliminated in consolidation.

Firm-sponsored mortgage and other securitization trusts

The Firm securitizes (or has securitized) originated and purchased residential mortgages, commercial mortgages and other consumer loans primarily in its CCB and CIB businesses. Depending on the particular transaction, as well as the respective business involved, the Firm may act as the servicer of the loans and/or retain certain beneficial interests in the securitization trusts.

The following table presents the total unpaid principal amount of assets held in Firm-sponsored private-label securitization entities, including those in which the Firm has continuing involvement, and those that are consolidated by the Firm. Continuing involvement includes servicing the loans, holding senior interests or subordinated interests (including amounts required to be held pursuant to credit risk retention rules), recourse or guarantee arrangements, and derivative contracts. In certain instances, the Firm's only continuing involvement is servicing the loans. The Firm's maximum loss exposure from retained and purchased interests is the carrying value of these interests. Refer to Securitization activity on page 259 of this Note for further information regarding the Firm's cash flows associated with and interests retained in nonconsolidated VIEs, and pages 259-260 of this Note for information on the Firm's loan sales and securitization activity related to U.S. GSEs and government agencies.

	Principal amount outstanding			JPMorgan Chase interest in securitized assets in nonconsolidated VIEs[c][d][e]			
December 31, 2020 (in millions)	Total assets held by securitization VIEs	Assets held in consolidated securitization VIEs	Assets held in nonconsolidated securitization VIEs with continuing involvement	Trading assets	Investment securities	Other financial assets	Total interests held by JPMorgan Chase
Securitization-related[a]							
Residential mortgage:							
Prime/Alt-A and option ARMs	**$ 49,644**	**$ 1,693**	**$ 41,265**	**$ 574**	**$ 724**	**$ –**	**$ 1,298**
Subprime	**12,896**	**46**	**12,154**	**9**	**–**	**–**	**9**
Commercial and other[b]	**119,732**	**–**	**92,351**	**955**	**1,549**	**262**	**2,766**
Total	**$ 182,272**	**$ 1,739**	**$ 145,770**	**$ 1,538**	**$ 2,273**	**$ 262**	**$ 4,073**

	Principal amount outstanding			JPMorgan Chase interest in securitized assets in nonconsolidated VIEs[c][d][e]			
December 31, 2019 (in millions)	Total assets held by securitization VIEs	Assets held in consolidated securitization VIEs	Assets held in nonconsolidated securitization VIEs with continuing involvement	Trading assets	Investment securities	Other financial assets	Total interests held by JPMorgan Chase
Securitization-related[a]							
Residential mortgage:							
Prime/Alt-A and option ARMs	$ 60,348	$ 2,796	$ 48,734	$ 535	$ 625	$ –	$ 1,160
Subprime	14,661	–	13,490	7	–	–	7
Commercial and other[b]	111,903	–	80,878	785	773	241	1,799
Total	$ 186,912	$ 2,796	$ 143,102	$ 1,327	$ 1,398	$ 241	$ 2,966

(a) Excludes U.S. GSEs and government agency securitizations and re-securitizations, which are not Firm-sponsored. Refer to pages 259-260 of this Note for information on the Firm's loan sales and securitization activity related to U.S. GSEs and government agencies.
(b) Consists of securities backed by commercial real estate loans and non-mortgage-related consumer receivables purchased from third parties.
(c) Excludes the following: retained servicing (refer to Note 15 for a discussion of MSRs); securities retained from loan sales and securitization activity related to U.S. GSEs and government agencies; interest rate and foreign exchange derivatives primarily used to manage interest rate and foreign exchange risks of securitization entities (refer to Note 5 for further information on derivatives); senior and subordinated securities of $105 million and $40 million, respectively, at December 31, 2020, and $106 million and $94 million, respectively, at December 31, 2019, which the Firm purchased in connection with CIB's secondary market-making activities.
(d) Includes interests held in re-securitization transactions.
(e) As of December 31, 2020 and 2019, 73% and 63%, respectively, of the Firm's retained securitization interests, which are predominantly carried at fair value and include amounts required to be held pursuant to credit risk retention rules, were risk-rated "A" or better, on an S&P-equivalent basis. The retained interests in prime residential mortgages consisted of $1.3 billion and $1.1 billion of investment-grade retained interests, and $41 million and $72 million of noninvestment-grade retained interests at December 31, 2020 and 2019, respectively. The retained interests in commercial and other securitization trusts consisted of $2.0 billion and $1.2 billion of investment-grade retained interests, and $753 million and $575 million of noninvestment-grade retained interests at December 31, 2020 and 2019, respectively.

Residential mortgage

The Firm securitizes residential mortgage loans originated by CCB, as well as residential mortgage loans purchased from third parties by either CCB or CIB. CCB generally retains servicing for all residential mortgage loans it originated or purchased, and for certain mortgage loans purchased by CIB. For securitizations of loans serviced by CCB, the Firm has the power to direct the significant activities of the VIE because it is responsible for decisions related to loan modifications and workouts. CCB may also retain an interest upon securitization.

In addition, CIB engages in underwriting and trading activities involving securities issued by Firm-sponsored securitization trusts. As a result, CIB at times retains senior and/or subordinated interests (including residual interests and amounts required to be held pursuant to credit risk retention rules) in residential mortgage securitizations at the time of securitization, and/or reacquires positions in the secondary market in the normal course of business. In certain instances, as a result of the positions retained or reacquired by CIB or held by Treasury and CIO or CCB, when considered together with the servicing arrangements entered into by CCB, the Firm is deemed to be the primary beneficiary of certain securitization trusts. Refer to the table on page 257 of this Note for more information on consolidated residential mortgage securitizations.

The Firm does not consolidate residential mortgage securitizations (Firm-sponsored or third-party-sponsored) when it is not the servicer (and therefore does not have the power to direct the most significant activities of the trust) or does not hold a beneficial interest in the trust that could potentially be significant to the trust. Refer to the table on page 257 of this Note for more information on the consolidated residential mortgage securitizations, and the table on the previous page of this Note for further information on interests held in nonconsolidated residential mortgage securitizations.

Commercial mortgages and other consumer securitizations

CIB originates and securitizes commercial mortgage loans, and engages in underwriting and trading activities involving the securities issued by securitization trusts. CIB may retain unsold senior and/or subordinated interests (including amounts required to be held pursuant to credit risk retention rules) in commercial mortgage securitizations at the time of securitization but, generally, the Firm does not service commercial loan securitizations. Treasury and CIO may choose to invest in these securitizations as well. For commercial mortgage securitizations the power to direct the significant activities of the VIE generally is held by the servicer or investors in a specified class of securities ("controlling class"). The Firm generally does not retain an interest in the controlling class in its sponsored commercial mortgage securitization transactions. Refer to the table on page 257 of this Note for more information on the consolidated commercial mortgage securitizations, and the table on the previous page of this Note for further information on interests held in nonconsolidated securitizations.

Re-securitizations

The Firm engages in certain re-securitization transactions in which debt securities are transferred to a VIE in exchange for new beneficial interests. These transfers occur in connection with both U.S. GSEs and government agency sponsored VIEs, which are backed by residential mortgages. The Firm's consolidation analysis is largely dependent on the Firm's role and interest in the re-securitization trusts.

The following table presents the principal amount of securities transferred to re-securitization VIEs.

Year ended December 31, (in millions)	**2020**	2019	2018
Transfers of securities to VIEs			
U.S. GSEs and government agencies	**$ 46,123**	$ 25,852	$ 15,532

Most re-securitizations with which the Firm is involved are client-driven transactions in which a specific client or group of clients is seeking a specific return or risk profile. For these transactions, the Firm has concluded that the decision-making power of the entity is shared between the Firm and its clients, considering the joint effort and decisions in establishing the re-securitization trust and its assets, as well as the significant economic interest the client holds in the re-securitization trust; therefore the Firm does not consolidate the re-securitization VIE.

The Firm did not transfer any private label securities to re-securitization VIEs during 2020, 2019 and 2018, respectively, and retained interests in any such Firm-sponsored VIEs as of December 31, 2020 and 2019 were immaterial.

Additionally, the Firm may invest in beneficial interests of third-party-sponsored re-securitizations and generally purchases these interests in the secondary market. In these circumstances, the Firm does not have the unilateral ability to direct the most significant activities of the re-securitization trust, either because it was not involved in the initial design of the trust, or the Firm is involved with an independent third-party sponsor and demonstrates shared power over the creation of the trust; therefore, the Firm does not consolidate the re-securitization VIE.

The following table presents information on the Firm's interests in nonconsolidated re-securitization VIEs.

December 31, (in millions)	Nonconsolidated re-securitization VIEs 2020	2019
U.S. GSEs and government agencies		
Interest in VIEs	**$ 2,631**	$ 2,928

As of December 31, 2020 and 2019, the Firm did not consolidate any U.S. GSE and government agency re-securitization VIEs or any Firm-sponsored private-label re-securitization VIEs.

Multi-seller conduits

Multi-seller conduit entities are separate bankruptcy remote entities that provide secured financing, collateralized by pools of receivables and other financial assets, to customers of the Firm. The conduits fund their financing facilities through the issuance of highly rated commercial paper. The primary source of repayment of the commercial paper is the cash flows from the pools of assets. In most instances, the assets are structured with deal-specific credit enhancements provided to the conduits by the customers (i.e., sellers) or other third parties. Deal-specific credit enhancements are generally structured to cover a multiple of historical losses expected on the pool of assets, and are typically in the form of overcollateralization provided by the seller. The deal-specific credit enhancements mitigate the Firm’s potential losses on its agreements with the conduits.

To ensure timely repayment of the commercial paper, and to provide the conduits with funding to provide financing to customers in the event that the conduits do not obtain funding in the commercial paper market, each asset pool financed by the conduits has a minimum 100% deal-specific liquidity facility associated with it provided by JPMorgan Chase Bank, N.A. JPMorgan Chase Bank, N.A. also provides the multi-seller conduit vehicles with uncommitted program-wide liquidity facilities and program-wide credit enhancement in the form of standby letters of credit. The amount of program-wide credit enhancement required is based upon commercial paper issuance and approximates 10% of the outstanding balance of commercial paper.

The Firm consolidates its Firm-administered multi-seller conduits, as the Firm has both the power to direct the significant activities of the conduits and a potentially significant economic interest in the conduits. As administrative agent and in its role in structuring transactions, the Firm makes decisions regarding asset types and credit quality, and manages the commercial paper funding needs of the conduits. The Firm’s interests that could potentially be significant to the VIEs include the fees received as administrative agent and liquidity and program-wide credit enhancement provider, as well as the potential exposure created by the liquidity and credit enhancement facilities provided to the conduits. Refer to page 257 of this Note for further information on consolidated VIE assets and liabilities.

In the normal course of business, JPMorgan Chase makes markets in and invests in commercial paper issued by the Firm-administered multi-seller conduits. The Firm held $13.5 billion and $16.3 billion of the commercial paper issued by the Firm-administered multi-seller conduits at December 31, 2020 and 2019, respectively, which have been eliminated in consolidation. The Firm’s investments reflect the Firm’s funding needs and capacity and were not driven by market illiquidity. Other than the amounts required to be held pursuant to credit risk retention rules, the Firm is not obligated under any agreement to purchase the commercial paper issued by the Firm-administered multi-seller conduits.

Deal-specific liquidity facilities, program-wide liquidity and credit enhancement provided by the Firm have been eliminated in consolidation. The Firm or the Firm-administered multi-seller conduits provide lending-related commitments to certain clients of the Firm-administered multi-seller conduits. The unfunded commitments were $12.2 billion and $8.9 billion at December 31, 2020 and 2019, respectively, and are reported as off-balance sheet lending-related commitments in other unfunded commitments to extend credit. Refer to Note 28 for more information on off-balance sheet lending-related commitments.

Municipal bond vehicles

Municipal bond vehicles or tender option bond (“TOB”) trusts allow institutions to finance their municipal bond investments at short-term rates. In a typical TOB transaction, the trust purchases highly rated municipal bond(s) of a single issuer and funds the purchase by issuing two types of securities: (1) puttable floating-rate certificates (“floaters”) and (2) inverse floating-rate residual interests (“residuals”). The floaters are typically purchased by money market funds or other short-term investors and may be tendered, with requisite notice, to the TOB trust. The residuals are retained by the investor seeking to finance its municipal bond investment. TOB transactions where the residual is held by a third-party investor are typically known as customer TOB trusts, and non-customer TOB trusts are transactions where the Residual is retained by the Firm. Customer TOB trusts are sponsored by a third party; refer to page 258 of this Note for further information. The Firm serves as sponsor for all non-customer TOB transactions. The Firm may provide various services to a TOB trust, including remarketing agent, liquidity or tender option provider, and/or sponsor.

J.P. Morgan Securities LLC may serve as a remarketing agent on the floaters for TOB trusts. The remarketing agent is responsible for establishing the periodic variable rate on the floaters, conducting the initial placement and remarketing tendered floaters. The remarketing agent may, but is not obligated to, make markets in floaters. Floaters held by the Firm were not material during 2020 and 2019.

JPMorgan Chase Bank, N.A. or J.P. Morgan Securities LLC often serves as the sole liquidity or tender option provider for the TOB trusts. The liquidity provider’s obligation to perform is conditional and is limited by certain events ("Termination Events"), which include bankruptcy or failure to pay by the municipal bond issuer or credit enhancement provider, an event of taxability on the municipal bonds or the immediate downgrade of the municipal bond to below investment grade. In addition, the liquidity provider's exposure is typically further limited by the high credit quality of the underlying municipal bonds, the excess collateralization in the vehicle, or, in certain transactions, the reimbursement agreements with the Residual holders.

Holders of the floaters may "put," or tender, their floaters to the TOB trust. If the remarketing agent cannot successfully remarket the floaters to another investor, the liquidity provider either provides a loan to the TOB trust for the TOB trust's purchase of the floaters, or it directly purchases the tendered floaters.

TOB trusts are considered to be variable interest entities. The Firm consolidates non-customer TOB trusts because as the Residual holder, the Firm has the right to make decisions that significantly impact the economic performance of the municipal bond vehicle, and it has the right to receive benefits and bear losses that could potentially be significant to the municipal bond vehicle.

Consolidated VIE assets and liabilities

The following table presents information on assets and liabilities related to VIEs consolidated by the Firm as of December 31, 2020 and 2019.

	Assets				Liabilities		
December 31, 2020 (in millions)	Trading assets	Loans	Other[(b)]	Total assets[(c)]	Beneficial interests in VIE assets[(d)]	Other[(e)]	Total liabilities
VIE program type							
Firm-sponsored credit card trusts	**$ —**	**$ 11,962**	**$ 148**	**$ 12,110**	**$ 4,943**	**$ 3**	**$ 4,946**
Firm-administered multi-seller conduits	**2**	**23,787**	**188**	**23,977**	**10,523**	**33**	**10,556**
Municipal bond vehicles	**1,930**	**—**	**2**	**1,932**	**1,902**	**—**	**1,902**
Mortgage securitization entities[(a)]	**—**	**1,694**	**94**	**1,788**	**210**	**108**	**318**
Other	**2**	**176**	**249**	**427**	**—**	**89**	**89**
Total	**$ 1,934**	**$ 37,619**	**$ 681**	**$ 40,234**	**$ 17,578**	**$ 233**	**$ 17,811**

	Assets				Liabilities		
December 31, 2019 (in millions)	Trading assets	Loans	Other[(b)]	Total assets[(c)]	Beneficial interests in VIE assets[(d)]	Other[(e)]	Total liabilities
VIE program type							
Firm-sponsored credit card trusts	$ —	$ 14,986	$ 266	$ 15,252	$ 6,461	$ 6	$ 6,467
Firm-administered multi-seller conduits	1	25,183	355	25,539	9,223	36	9,259
Municipal bond vehicles	1,903	—	4	1,907	1,881	3	1,884
Mortgage securitization entities[(a)]	66	2,762	64	2,892	276	130	406
Other	663	—	192	855	—	272	272
Total	$ 2,633	$ 42,931	$ 881	$ 46,445	$ 17,841	$ 447	$ 18,288

(a) Includes residential and commercial mortgage securitizations.
(b) Includes assets classified as cash and other assets on the Consolidated balance sheets.
(c) The assets of the consolidated VIEs included in the program types above are used to settle the liabilities of those entities. The assets and liabilities include third-party assets and liabilities of consolidated VIEs and exclude intercompany balances that eliminate in consolidation.
(d) The interest-bearing beneficial interest liabilities issued by consolidated VIEs are classified in the line item on the Consolidated balance sheets titled, "Beneficial interests issued by consolidated variable interest entities." The holders of these beneficial interests generally do not have recourse to the general credit of JPMorgan Chase. Included in beneficial interests in VIE assets are long-term beneficial interests of $5.2 billion and $6.7 billion at December 31, 2020 and 2019, respectively. Refer to Note 20 for additional information on interest-bearing long-term beneficial interests.
(e) Includes liabilities classified as accounts payable and other liabilities on the Consolidated balance sheets.

VIEs sponsored by third parties

The Firm enters into transactions with VIEs structured by other parties. These include, for example, acting as a derivative counterparty, liquidity provider, investor, underwriter, placement agent, remarketing agent, trustee or custodian. These transactions are conducted at arm's-length, and individual credit decisions are based on the analysis of the specific VIE, taking into consideration the quality of the underlying assets. Where the Firm does not have the power to direct the activities of the VIE that most significantly impact the VIE's economic performance, or a variable interest that could potentially be significant, the Firm generally does not consolidate the VIE, but it records and reports these positions on its Consolidated balance sheets in the same manner it would record and report positions in respect of any other third-party transaction.

Tax credit vehicles

The Firm holds investments in unconsolidated tax credit vehicles, which are limited partnerships and similar entities that own and operate affordable housing, energy, and other projects. These entities are primarily considered VIEs. A third party is typically the general partner or managing member and has control over the significant activities of the tax credit vehicles, and accordingly the Firm does not consolidate tax credit vehicles. The Firm generally invests in these partnerships as a limited partner and earns a return primarily through the receipt of tax credits allocated to the projects. The maximum loss exposure, represented by equity investments and funding commitments, was $24.9 billion and $19.1 billion, of which $8.7 billion and $5.5 billion was unfunded at December 31, 2020 and 2019, respectively. In order to reduce the risk of loss, the Firm assesses each project and withholds varying amounts of its capital investment until the project qualifies for tax credits. Refer to Note 25 for further information on affordable housing tax credits. Refer to Note 28 for more information on off-balance sheet lending-related commitments.

Customer municipal bond vehicles (TOB trusts)

The Firm may provide various services to customer TOB trusts, including remarketing agent, liquidity or tender option provider. In certain customer TOB transactions, the Firm, as liquidity provider, has entered into a reimbursement agreement with the Residual holder. In those transactions, upon the termination of the vehicle, the Firm has recourse to the third-party Residual holders for any shortfall. The Firm does not have any intent to protect Residual holders from potential losses on any of the underlying municipal bonds. The Firm does not consolidate customer TOB trusts, since the Firm does not have the power to make decisions that significantly impact the economic performance of the municipal bond vehicle. The Firm's maximum exposure as a liquidity provider to customer TOB trusts at December 31, 2020 and 2019, was $6.7 billion and $5.5 billion, respectively. The fair value of assets held by such VIEs at December 31, 2020 and 2019 was $10.5 billion and $8.6 billion, respectively. Refer to Note 28 for more information on off-balance sheet lending-related commitments.

Loan securitizations

The Firm has securitized and sold a variety of loans, including residential mortgage, credit card, and commercial mortgage. The purposes of these securitization transactions were to satisfy investor demand and to generate liquidity for the Firm.

For loan securitizations in which the Firm is not required to consolidate the trust, the Firm records the transfer of the loan receivable to the trust as a sale when all of the following accounting criteria for a sale are met: (1) the transferred financial assets are legally isolated from the Firm's creditors; (2) the transferee or beneficial interest holder can pledge or exchange the transferred financial assets; and (3) the Firm does not maintain effective control over the transferred financial assets (e.g., the Firm cannot repurchase the transferred assets before their maturity and it does not have the ability to unilaterally cause the holder to return the transferred assets).

For loan securitizations accounted for as a sale, the Firm recognizes a gain or loss based on the difference between the value of proceeds received (including cash, beneficial interests, or servicing assets received) and the carrying value of the assets sold. Gains and losses on securitizations are reported in noninterest revenue.

Securitization activity

The following table provides information related to the Firm's securitization activities for the years ended December 31, 2020, 2019 and 2018, related to assets held in Firm-sponsored securitization entities that were not consolidated by the Firm, and where sale accounting was achieved at the time of the securitization.

Year ended December 31, (in millions)	2020 Residential mortgage[d]	2020 Commercial and other[e]	2019 Residential mortgage[d]	2019 Commercial and other[e]	2018 Residential mortgage[d]	2018 Commercial and other[e]
Principal securitized	**$ 7,103**	**$ 6,624**	$ 9,957	$ 9,390	$ 6,431	$ 10,159
All cash flows during the period:[a]						
Proceeds received from loan sales as financial instruments[b][c]	**$ 7,321**	**$ 6,865**	$ 10,238	$ 9,544	$ 6,449	$ 10,218
Servicing fees collected	**211**	**1**	287	2	319	2
Cash flows received on interests	**801**	**239**	507	237	411	301

(a) Excludes re-securitization transactions.
(b) Predominantly includes Level 2 assets.
(c) The carrying value of the loans accounted for at fair value approximated the proceeds received upon loan sale.
(d) Represents prime mortgages. Excludes loan securitization activity related to U.S. GSEs and government agencies.
(e) Includes commercial mortgage and other consumer loans.

Key assumptions used to value retained interests originated during the year are shown in the table below.

Year ended December 31,	2020	2019	2018
Residential mortgage retained interest:			
Weighted-average life (in years)	**4.7**	4.8	7.6
Weighted-average discount rate	**8.2 %**	7.4 %	3.6 %
Commercial mortgage retained interest:			
Weighted-average life (in years)	**6.9**	6.4	5.3
Weighted-average discount rate	**3.0 %**	4.1 %	4.0 %

Loans and excess MSRs sold to U.S. government-sponsored enterprises and loans in securitization transactions pursuant to Ginnie Mae guidelines

In addition to the amounts reported in the securitization activity tables above, the Firm, in the normal course of business, sells originated and purchased mortgage loans and certain originated excess MSRs on a nonrecourse basis, predominantly to U.S. GSEs. These loans and excess MSRs are sold primarily for the purpose of securitization by the U.S. GSEs, who provide certain guarantee provisions (e.g., credit enhancement of the loans). The Firm also sells loans into securitization transactions pursuant to Ginnie Mae guidelines; these loans are typically insured or guaranteed by another U.S. government agency. The Firm does not consolidate the securitization vehicles underlying these transactions as it is not the primary beneficiary. For a limited number of loan sales, the Firm is obligated to share a portion of the credit risk associated with the sold loans with the purchaser. Refer to Note 28 for additional information about the Firm's loan sales- and securitization-related indemnifications. Refer to Note 15 for additional information about the impact of the Firm's sale of certain excess MSRs.

The following table summarizes the activities related to loans sold to the U.S. GSEs, and loans in securitization transactions pursuant to Ginnie Mae guidelines.

Year ended December 31, (in millions)	2020	2019	2018
Carrying value of loans sold	**$ 81,153**	$ 92,349	$ 44,609
Proceeds received from loan sales as cash	**$ 45**	$ 73	$ 9
Proceeds from loan sales as securities[(a)(b)]	**80,186**	91,422	43,671
Total proceeds received from loan sales[(c)]	**$ 80,231**	$ 91,495	$ 43,680
Gains/(losses) on loan sales[(d)(e)]	**$ 6**	$ 499	$ (93)

(a) Includes securities from U.S. GSEs and Ginnie Mae that are generally sold shortly after receipt or retained as part of the Firm's investment securities portfolio.
(b) Included in level 2 assets.
(c) Excludes the value of MSRs retained upon the sale of loans.
(d) Gains/(losses) on loan sales include the value of MSRs.
(e) The carrying value of the loans accounted for at fair value approximated the proceeds received upon loan sale.

Options to repurchase delinquent loans

In addition to the Firm's obligation to repurchase certain loans due to material breaches of representations and warranties as discussed in Note 28, the Firm also has the option to repurchase delinquent loans that it services for Ginnie Mae loan pools, as well as for other U.S. government agencies under certain arrangements. The Firm typically elects to repurchase delinquent loans from Ginnie Mae loan pools as it continues to service them and/or manage the foreclosure process in accordance with the applicable requirements, and such loans continue to be insured or guaranteed. When the Firm's repurchase option becomes exercisable, such loans must be reported on the Consolidated balance sheets as a loan with a corresponding liability. Refer to Note 12 for additional information.

The following table presents loans the Firm repurchased or had an option to repurchase, real estate owned, and foreclosed government-guaranteed residential mortgage loans recognized on the Firm's Consolidated balance sheets as of December 31, 2020 and 2019. Substantially all of these loans and real estate are insured or guaranteed by U.S. government agencies.

December 31, (in millions)	2020	2019
Loans repurchased or option to repurchase[(a)]	**$ 1,413**	$ 2,941
Real estate owned	**9**	41
Foreclosed government-guaranteed residential mortgage loans[(b)]	**64**	198

(a) Predominantly all of these amounts relate to loans that have been repurchased from Ginnie Mae loan pools.
(b) Relates to voluntary repurchases of loans, which are included in accrued interest and accounts receivable.

Loan delinquencies and liquidation losses

The table below includes information about components of and delinquencies related to nonconsolidated securitized financial assets held in Firm-sponsored private-label securitization entities, in which the Firm has continuing involvement as of December 31, 2020 and 2019.

	Securitized assets		90 days past due		Net liquidation losses	
As of or for the year ended December 31, (in millions)	2020	2019	2020	2019	2020	2019
Securitized loans						
Residential mortgage:						
Prime/ Alt-A & option ARMs	**$ 41,265**	$ 48,734	**$ 4,988**	$ 2,449	**$ 212**	$ 579
Subprime	**12,154**	13,490	**2,406**	1,813	**179**	532
Commercial and other	**92,351**	80,878	**5,958**	187	**30**	445
Total loans securitized	**$ 145,770**	$ 143,102	**$ 13,352**	$ 4,449	**$ 421**	$ 1,556

Note 15 – Goodwill and Mortgage servicing rights

Goodwill

Goodwill is recorded upon completion of a business combination as the difference between the purchase price and the fair value of the net assets acquired, and can be adjusted up to one year from the acquisition date as more information is obtained about the fair value of assets acquired and liabilities assumed. Subsequent to initial recognition, goodwill is not amortized but is tested for impairment during the fourth quarter of each fiscal year, or more often if events or circumstances, such as adverse changes in the business climate, indicate that there may be an impairment.

The goodwill associated with each business combination is allocated to the related reporting units, which are determined based on how the Firm's businesses are managed and how they are reviewed. The following table presents goodwill attributed to the business segments.

December 31, (in millions)	2020	2019	2018
Consumer & Community Banking[(a)]	**$ 31,311**	$ 30,133	$ 30,084
Corporate & Investment Bank[(a)]	**7,913**	7,901	7,721
Commercial Banking	**2,985**	2,982	2,860
Asset & Wealth Management[(a)]	**7,039**	6,807	6,806
Total goodwill	**$ 49,248**	$ 47,823	$ 47,471

(a) In 2020, goodwill of $959 million was transferred from CCB to CIB and $51 million from AWM to CCB related to business realignments. Prior-period amounts have been revised to conform with the current presentation. Refer to Note 32 for additional information on these realignments.

The following table presents changes in the carrying amount of goodwill.

Year ended December 31, (in millions)	2020	2019	2018
Balance at beginning of period	**$ 47,823**	$ 47,471	$ 47,507
Changes during the period from:			
Business combinations[(a)]	**1,412**	349	–
Other[(b)]	**13**	3	(36)
Balance at December 31,	**$ 49,248**	$ 47,823	$ 47,471

(a) For 2020, represents estimated goodwill associated with the acquisitions of cxLoyalty in CCB and 55ip in AWM. For 2019, represents goodwill associated with the acquisition of InstaMed. This goodwill was allocated to CIB, CB and CCB.
(b) Primarily relates to foreign currency adjustments.

Goodwill impairment testing

The Firm's goodwill was not impaired at December 31, 2020, 2019 and 2018.

Effective January 1, 2020, the Firm adopted new accounting guidance related to goodwill impairment testing. The adoption of the guidance requires recognition of an impairment loss when the estimated fair value of a reporting unit falls below its carrying value. It eliminated the requirement that an impairment loss be recognized only if the estimated implied fair value of the goodwill is below its carrying value.

The goodwill impairment test is performed by comparing the current fair value of each reporting unit with its carrying value. If the fair value is in excess of the carrying value, then the reporting unit's goodwill is considered not to be impaired. If the fair value is less than the carrying value, then an impairment charge is recognized for the amount by which the reporting unit's carrying value exceeds its fair value, up to the amount of goodwill allocated to that reporting unit.

The Firm uses the reporting units' allocated capital plus goodwill and other intangible assets as a proxy for the carrying values of equity for the reporting units in the goodwill impairment testing. Reporting unit equity is determined on a similar basis as the allocation of capital to the LOBs which takes into consideration a variety of factors including capital levels of similarly rated peers and applicable regulatory capital requirements. Proposed LOB capital levels are incorporated into the Firm's annual budget process, which is reviewed by the Firm's Board of Directors. Allocated capital is further reviewed periodically and updated as needed.

The primary method the Firm uses to estimate the fair value of its reporting units is the income approach. This approach projects cash flows for the forecast period and uses the perpetuity growth method to calculate terminal values. These cash flows and terminal values are then discounted using an appropriate discount rate. Projections of cash flows are based on the reporting units' earnings forecasts which are reviewed with senior management of the Firm. The discount rate used for each reporting unit represents an estimate of the cost of equity for that reporting unit and is determined considering the Firm's overall estimated cost of equity (estimated using the Capital Asset Pricing Model), as adjusted for the risk characteristics specific to each reporting unit (for example, for higher levels of risk or uncertainty associated with the business or management's forecasts and assumptions). To assess the reasonableness of the discount rates used for each reporting unit, management compares the discount rate to the estimated cost of equity for publicly traded institutions with similar businesses and risk characteristics. In addition, the weighted average cost of equity (aggregating the various reporting units) is compared with the Firm's overall estimated cost of equity to ensure reasonableness. The valuations derived from the discounted cash flow analysis are then compared with market-based trading and transaction multiples for relevant competitors. Trading and transaction comparables are used as general indicators to assess the overall reasonableness of the estimated fair values, although precise conclusions generally cannot be drawn due to the differences that naturally exist between the Firm's businesses and competitor institutions.

Management also takes into consideration a comparison between the aggregate fair values of the Firm's reporting units and JPMorgan Chase's market capitalization. In evaluating this comparison, management considers several factors, including (i) a control premium that would exist in a market transaction, (ii) factors related to the level of execution risk that would exist at the Firmwide level that do not exist at the reporting unit level and (iii) short-term market volatility and other factors that do not directly affect the value of individual reporting units.

Unanticipated declines in business performance, increases in credit losses, increases in capital requirements, as well as deterioration in economic or market conditions, adverse regulatory or legislative changes or increases in the estimated market cost of equity, could cause the estimated fair values of the Firm's reporting units to decline in the future, which could result in a material impairment charge to earnings in a future period related to some portion of the associated goodwill.

Mortgage servicing rights

MSRs represent the fair value of expected future cash flows for performing servicing activities for others. The fair value considers estimated future servicing fees and ancillary revenue, offset by estimated costs to service the loans, and generally declines over time as net servicing cash flows are received, effectively amortizing the MSR asset against contractual servicing and ancillary fee income. MSRs are either purchased from third parties or recognized upon sale or securitization of mortgage loans if servicing is retained.

As permitted by U.S. GAAP, the Firm has elected to account for its MSRs at fair value. The Firm treats its MSRs as a single class of servicing assets based on the availability of market inputs used to measure the fair value of its MSR asset and its treatment of MSRs as one aggregate pool for risk management purposes. The Firm estimates the fair value of MSRs using an option-adjusted spread ("OAS") model, which projects MSR cash flows over multiple interest rate scenarios in conjunction with the Firm's prepayment model, and then discounts these cash flows at risk-adjusted rates. The model considers portfolio characteristics, contractually specified servicing fees, prepayment assumptions, delinquency rates, costs to service, late charges and other ancillary revenue, and other economic factors. The Firm compares fair value estimates and assumptions to observable market data where available, and also considers recent market activity and actual portfolio experience.

The fair value of MSRs is sensitive to changes in interest rates, including their effect on prepayment speeds. MSRs typically decrease in value when interest rates decline because declining interest rates tend to increase prepayments and therefore reduce the expected life of the net servicing cash flows that comprise the MSR asset. Conversely, securities (e.g., mortgage-backed securities), and certain derivatives (e.g., those for which the Firm receives fixed-rate interest payments) increase in value when interest rates decline. JPMorgan Chase uses combinations of derivatives and securities to manage the risk of changes in the fair value of MSRs. The intent is to offset any interest-rate related changes in the fair value of MSRs with changes in the fair value of the related risk management instruments.

The following table summarizes MSR activity for the years ended December 31, 2020, 2019 and 2018.

As of or for the year ended December 31, (in millions, except where otherwise noted)	**2020**	2019	2018
Fair value at beginning of period	**$ 4,699**	$ 6,130	$ 6,030
MSR activity:			
Originations of MSRs	**944**	1,384	931
Purchase of MSRs	**248**	105	315
Disposition of MSRs[(a)]	**(176)**	(789)	(636)
Net additions/(Dispositions)	**1,016**	700	610
Changes due to collection/realization of expected cash flows	**(899)**	(951)	(740)
Changes in valuation due to inputs and assumptions:			
Changes due to market interest rates and other[(b)]	**(1,568)**	(893)	300
Changes in valuation due to other inputs and assumptions:			
Projected cash flows (e.g., cost to service)	**(54)**	(333) [(e)]	15
Discount rates	**199**	153	24
Prepayment model changes and other[(c)]	**(117)**	(107)	(109)
Total changes in valuation due to other inputs and assumptions	**28**	(287)	(70)
Total changes in valuation due to inputs and assumptions	**(1,540)**	(1,180)	230
Fair value at December 31,	**$ 3,276**	$ 4,699	$ 6,130
Change in unrealized gains/(losses) included in income related to MSRs held at December 31,	**$ (1,540)**	$ (1,180)	$ 230
Contractual service fees, late fees and other ancillary fees included in income	**1,325**	1,639	1,778
Third-party mortgage loans serviced at December 31, (in billions)	**448.0**	522.0	521.0
Servicer advances, net of an allowance for uncollectible amounts, at December 31, (in billions)[(d)]	**1.8**	2.0	3.0

(a) Includes excess MSRs transferred to agency-sponsored trusts in exchange for stripped mortgage backed securities ("SMBS"). In each transaction, a portion of the SMBS was acquired by third parties at the transaction date; the Firm acquired the remaining balance of those SMBS as trading securities.
(b) Represents both the impact of changes in estimated future prepayments due to changes in market interest rates, and the difference between actual and expected prepayments.
(c) Represents changes in prepayments other than those attributable to changes in market interest rates.
(d) Represents amounts the Firm pays as the servicer (e.g., scheduled principal and interest, taxes and insurance), which will generally be reimbursed within a short period of time after the advance from future cash flows from the trust or the underlying loans. The Firm's credit risk associated with these servicer advances is minimal because reimbursement of the advances is typically senior to all cash payments to investors. In addition, the Firm maintains the right to stop payment to investors if the collateral is insufficient to cover the advance. However, certain of these servicer advances may not be recoverable if they were not made in accordance with applicable rules and agreements.
(e) The decrease in projected cash flows was largely related to default servicing assumption updates.

The following table presents the components of mortgage fees and related income (including the impact of MSR risk management activities) for the years ended December 31, 2020, 2019 and 2018.

Year ended December 31, (in millions)	2020	2019	2018
CCB mortgage fees and related income			
Net production revenue	**$ 2,629**	$ 1,618	$ 268
Net mortgage servicing revenue:			
Operating revenue:			
Loan servicing revenue	**1,367**	1,533	1,835
Changes in MSR asset fair value due to collection/realization of expected cash flows	**(899)**	(951)	(740)
Total operating revenue	**468**	582	1,095
Risk management:			
Changes in MSR asset fair value due to market interest rates and other[a]	**(1,568)**	(893)	300
Other changes in MSR asset fair value due to other inputs and assumptions in model[b]	**28**	(287)	(70)
Change in derivative fair value and other	**1,522**	1,015	(341)
Total risk management	**(18)**	(165)	(111)
Total net mortgage servicing revenue	**450**	417	984
Total CCB mortgage fees and related income	**3,079**	2,035	1,252
All other	**12**	1	2
Mortgage fees and related income	**$ 3,091**	$ 2,036	$ 1,254

(a) Represents both the impact of changes in estimated future prepayments due to changes in market interest rates, and the difference between actual and expected prepayments.
(b) Represents the aggregate impact of changes in model inputs and assumptions such as projected cash flows (e.g., cost to service), discount rates and changes in prepayments other than those attributable to changes in market interest rates (e.g., changes in prepayments due to changes in home prices).

The table below outlines the key economic assumptions used to determine the fair value of the Firm's MSRs at December 31, 2020 and 2019, and outlines the sensitivities of those fair values to immediate adverse changes in those assumptions, as defined below.

December 31, (in millions, except rates)	2020	2019
Weighted-average prepayment speed assumption (constant prepayment rate)	**14.90 %**	11.67 %
Impact on fair value of 10% adverse change	**$ (206)**	$ (200)
Impact on fair value of 20% adverse change	**(392)**	(384)
Weighted-average option adjusted spread[a]	**7.19 %**	7.93 %
Impact on fair value of 100 basis points adverse change	**$ (134)**	$ (169)
Impact on fair value of 200 basis points adverse change	**(258)**	(326)

(a) Includes the impact of operational risk and regulatory capital.

Changes in fair value based on variations in assumptions generally cannot be easily extrapolated, because the relationship of the change in the assumptions to the change in fair value are often highly interrelated and may not be linear. In this table, the effect that a change in a particular assumption may have on the fair value is calculated without changing any other assumption. In reality, changes in one factor may result in changes in another, which would either magnify or counteract the impact of the initial change.

Note 16 – Premises and equipment

Premises and equipment, including leasehold improvements, are carried at cost less accumulated depreciation and amortization. JPMorgan Chase computes depreciation using the straight-line method over the estimated useful life of an asset. For leasehold improvements, the Firm uses the straight-line method computed over the lesser of the remainder of the lease term, or estimated useful life of the improvements.

JPMorgan Chase capitalizes certain costs associated with the acquisition or development of internal-use software. Once the software is ready for its intended use, these costs are amortized on a straight-line basis over the software's expected useful life and reviewed for impairment on an ongoing basis.

Note 17 – Deposits

At December 31, 2020 and 2019, noninterest-bearing and interest-bearing deposits were as follows.

December 31, (in millions)	2020	2019
U.S. offices		
Noninterest-bearing (included **$9,873** and $22,637 at fair value)[(a)]	**$ 572,711**	$ 395,667
Interest-bearing (included **$2,567** and $2,534 at fair value)[(a)]	**1,197,032**	876,156
Total deposits in U.S. offices	**1,769,743**	1,271,823
Non-U.S. offices		
Noninterest-bearing (included **$1,486** and $1,980 at fair value)[(a)]	**23,435**	20,087
Interest-bearing (included **$558** and $1,438 at fair value)[(a)]	**351,079**	270,521
Total deposits in non-U.S. offices	**374,514**	290,608
Total deposits	**$ 2,144,257**	$1,562,431

(a) Includes structured notes classified as deposits for which the fair value option has been elected. Refer to Note 3 for further discussion.

At December 31, 2020 and 2019, time deposits in denominations of $250,000 or more were as follows.

December 31, (in millions)	2020	2019
U.S. offices	**$ 33,812**	$ 44,127
Non-U.S. offices	**50,523**	50,840
Total	**$ 84,335**	$ 94,967

At December 31, 2020, the maturities of interest-bearing time deposits were as follows.

December 31, 2020 (in millions)	U.S.	Non-U.S.	Total
2021	$ 44,785	$ 48,142	$ 92,927
2022	1,451	175	1,626
2023	259	7	266
2024	210	36	246
2025	197	633	830
After 5 years	451	298	749
Total	$ 47,353	$ 49,291	$ 96,644

Note 18 - Leases

Firm as lessee

At December 31, 2020, JPMorgan Chase and its subsidiaries were obligated under a number of noncancelable leases, predominantly operating leases for premises and equipment used primarily for business purposes. These leases generally have terms of 20 years or less, determined based on the contractual maturity of the lease, and include periods covered by options to extend or terminate the lease when the Firm is reasonably certain that it will exercise those options. All leases with lease terms greater than twelve months are reported as a lease liability with a corresponding right-of-use (“ROU”) asset. None of these lease agreements impose restrictions on the Firm’s ability to pay dividends, engage in debt or equity financing transactions or enter into further lease agreements. Certain of these leases contain escalation clauses that will increase rental payments based on maintenance, utility and tax increases, which are non-lease components. The Firm elected not to separate lease and non-lease components of a contract for its real estate leases. As such, real estate lease payments represent payments on both lease and non-lease components.

Operating lease liabilities and ROU assets are recognized at the lease commencement date based on the present value of the future minimum lease payments over the lease term. The future lease payments are discounted at a rate that represents the Firm’s collateralized borrowing rate for financing instruments of a similar term and are included in accounts payable and other liabilities. The operating lease ROU asset, included in premises and equipment, also includes any lease prepayments made, plus initial direct costs incurred, less any lease incentives received. Rental expense associated with operating leases is recognized on a straight-line basis over the lease term, and generally included in occupancy expense in the Consolidated statements of income.

The following tables provide information related to the Firm’s operating leases:

December 31, (in millions, except where otherwise noted)	2020	2019
Right-of-use assets	$ 8,006	$ 8,190
Lease liabilities	8,508	8,505
Weighted average remaining lease term (in years)	8.7	8.8
Weighted average discount rate	3.48 %	3.68 %
Supplemental cash flow information		
Cash paid for amounts included in the measurement of lease liabilities - operating cash flows	$ 1,626	$ 1,572
Supplemental non-cash information		
Right-of-use assets obtained in exchange for operating lease obligations	$ 1,350	$ 1,413

Year ended December 31, (in millions)	2020	2019
Rental expense		
Gross rental expense	$ 2,094	$ 2,057
Sublease rental income	(166)	(184)
Net rental expense	$ 1,928	$ 1,873

The following table presents future payments under operating leases as of December 31, 2020:

Year ended December 31, (in millions)	
2021	$ 1,606
2022	1,435
2023	1,270
2024	1,123
2025	947
After 2025	3,602
Total future minimum lease payments	9,983
Less: Imputed interest	(1,475)
Total	$ 8,508

In addition to the table above, as of December 31, 2020, the Firm had additional future operating lease commitments of $1.2 billion that were signed but had not yet commenced. These operating leases will commence between 2021 and 2023 with lease terms up to 25 years.

Firm as lessor

The Firm provides auto and equipment lease financing to its customers through lease arrangements with lease terms that may contain renewal, termination and/or purchase options. Generally, the Firm's lease financings are operating leases. These assets subject to operating leases are recognized in other assets on the Firm's Consolidated balance sheets and are depreciated on a straight-line basis over the lease term to reduce the asset to its estimated residual value. Depreciation expense is included in technology, communications and equipment expense in the Consolidated statements of income. The Firm's lease income is generally recognized on a straight-line basis over the lease term and is included in other income in the Consolidated statements of income.

On a periodic basis, the Firm assesses leased assets for impairment, and if the carrying amount of the leased asset exceeds the undiscounted cash flows from the lease payments and the estimated residual value upon disposition of the leased asset, an impairment loss is recognized.

The risk of loss on auto and equipment leased assets relating to the residual value of the leased assets is monitored through projections of the asset residual values at lease origination and periodic review of residual values, and is mitigated through arrangements with certain manufacturers or lessees.

The following table presents the carrying value of assets subject to leases reported on the Consolidated balance sheets:

December 31, (in millions)	2020	2019
Carrying value of assets subject to operating leases, net of accumulated depreciation	**$ 21,155**	$ 23,587
Accumulated depreciation	**6,388**	6,121

The following table presents the Firm's operating lease income and the related depreciation expense on the Consolidated statements of income:

Year ended December 31, (in millions)	2020	2019	2018
Operating lease income	**$ 5,539**	$ 5,455	$ 4,540
Depreciation expense	**4,257**	4,157	3,522

The following table presents future receipts under operating leases as of December 31, 2020:

Year ended December 31, (in millions)	
2021	$ 3,686
2022	2,084
2023	613
2024	52
2025	24
After 2025	34
Total future minimum lease receipts	$ 6,493

Note 19 – Accounts payable and other liabilities

Accounts payable and other liabilities consist of brokerage payables, which include payables to customers and payables related to security purchases that did not settle, as well as other accrued expenses, such as income tax payables, operating lease liabilities, credit card rewards liability, and litigation reserves.

The following table details the components of accounts payable and other liabilities.

December 31, (in millions)	2020	2019
Brokerage payables	**$ 140,291**	$ 118,375
Other payables and liabilities[(a)]	**92,308**	92,032
Total accounts payable and other liabilities	**$ 232,599**	$ 210,407

(a) Includes credit card rewards liability of $7.7 billion and $6.4 billion at December 31, 2020 and 2019, respectively.

Note 20 – Long-term debt

JPMorgan Chase issues long-term debt denominated in various currencies, predominantly U.S. dollars, with both fixed and variable interest rates. Included in senior and subordinated debt below are various equity-linked or other indexed instruments, which the Firm has elected to measure at fair value. Changes in fair value are recorded in principal transactions revenue in the Consolidated statements of income, except for unrealized gains/(losses) due to DVA which are recorded in OCI. The following table is a summary of long-term debt carrying values (including unamortized premiums and discounts, issuance costs, valuation adjustments and fair value adjustments, where applicable) by remaining contractual maturity as of December 31, 2020.

By remaining maturity at December 31, (in millions, except rates)		2020				2019
		Under 1 year	1-5 years	After 5 years	**Total**	Total
Parent company						
Senior debt:	Fixed rate	**$ 9,225**	**$ 49,987**	**$ 114,296**	**$ 173,508**	$ 161,198
	Variable rate	**1,580**	**8,644**	**8,353**	**18,577**	18,615
	Interest rates[a]	**1.33-4.63%**	**0.50-4.50%**	**0.17-6.40%**	**0.17-6.40%**	0.15-6.40%
Subordinated debt:	Fixed rate	**$ –**	**$ 5,678**	**$ 13,577**	**$ 19,255**	$ 15,155
	Variable rate	**–**	**–**	**9**	**9**	9
	Interest rates[a]	**–%**	**3.38-7.75%**	**2.96-8.00%**	**2.96-8.00%**	3.38-8.00%
	Subtotal	**$ 10,805**	**$ 64,309**	**$ 136,235**	**$ 211,349**	$ 194,977
Subsidiaries						
Federal Home Loan Banks advances:	Fixed rate	**$ 7**	**$ 45**	**$ 71**	**$ 123**	$ 135
	Variable rate	**3,000**	**11,000**	**–**	**14,000**	28,500
	Interest rates[a]	**0.57-0.60%**	**0.19-0.24%**	**4.66-7.73%**	**0.19-7.73%**	1.67-8.31% [h]
Senior debt:	Fixed rate	**$ 1,067**	**$ 3,157**	**$ 11,534**	**$ 15,758**	$ 19,597
	Variable rate	**12,055**	**18,448**	**7,608**	**38,111**	45,861
	Interest rates[a]	**–%**	**7.28%**	**1.00-1.30%**	**1.00-7.28%**	1.00-9.43%
Subordinated debt:	Fixed rate	**$ –**	**$ 309**	**$ –**	**$ 309**	$ 305
	Variable rate	**–**	**–**	**–**	**–**	–
	Interest rates[a]	**– %**	**8.25 %**	**– %**	**8.25 %**	8.25 %
	Subtotal	**$ 16,129**	**$ 32,959**	**$ 19,213**	**$ 68,301**	$ 94,398
Junior subordinated debt:	Fixed rate	**$ –**	**$ –**	**$ 738**	**$ 738**	$ 693
	Variable rate	**–**	**–**	**1,297**	**1,297**	1,430
	Interest rates[a]	**–%**	**–%**	**0.71-8.75%**	**0.71-8.75%**	2.41-8.75%
	Subtotal	**$ –**	**$ –**	**$ 2,035**	**$ 2,035**	$ 2,123
Total long-term debt[b][c][d]		**$ 26,934**	**$ 97,268**	**$ 157,483**	**$ 281,685** [f][g]	$ 291,498
Long-term beneficial interests:	Fixed rate	**$ 625**	**$ 1,744**	**$ –**	**$ 2,369**	$ 2,990
	Variable rate	**1,924**	**650**	**210**	**2,784**	3,748
	Interest rates	**0.36-2.77%**	**0.00-2.39%**	**0.00-3.75%**	**0.00-3.75%**	0.00-4.06%
Total long-term beneficial interests[e]		**$ 2,549**	**$ 2,394**	**$ 210**	**$ 5,153**	$ 6,738

(a) The interest rates shown are the range of contractual rates in effect at December 31, 2020 and 2019, respectively, including non-U.S. dollar fixed- and variable-rate issuances, which excludes the effects of the associated derivative instruments used in hedge accounting relationships, if applicable. The use of these derivative instruments modifies the Firm's exposure to the contractual interest rates disclosed in the table above. Including the effects of the hedge accounting derivatives, the range of modified rates in effect at December 31, 2020, for total long-term debt was (0.40)% to 7.28%, versus the contractual range of 0.17% to 8.75% presented in the table above. The interest rate ranges shown exclude structured notes accounted for at fair value.

(b) Included long-term debt of $17.2 billion and $32.0 billion secured by assets totaling $166.4 billion and $186.1 billion at December 31, 2020 and 2019, respectively. The amount of long-term debt secured by assets does not include amounts related to hybrid instruments.

(c) Included $76.8 billion and $75.7 billion of long-term debt accounted for at fair value at December 31, 2020 and 2019, respectively.

(d) Included $16.1 billion and $14.0 billion of outstanding zero-coupon notes at December 31, 2020 and 2019, respectively. The aggregate principal amount of these notes at their respective maturities is $45.3 billion and $39.7 billion, respectively. The aggregate principal amount reflects the contractual principal payment at maturity, which may exceed the contractual principal payment at the Firm's next call date, if applicable.

(e) Included on the Consolidated balance sheets in beneficial interests issued by consolidated VIEs. Also included $41 million and $36 million accounted for at fair value at December 31, 2020 and 2019, respectively. Excluded short-term commercial paper and other short-term beneficial interests of $12.4 billion and $11.1 billion at December 31, 2020 and 2019, respectively.

(f) At December 31, 2020, long-term debt in the aggregate of $151.3 billion was redeemable at the option of JPMorgan Chase, in whole or in part, prior to maturity, based on the terms specified in the respective instruments.

(g) The aggregate carrying values of debt that matures in each of the five years subsequent to 2020 is $26.9 billion in 2021, $18.4 billion in 2022, $32.2 billion in 2023, $29.6 billion in 2024 and $17.1 billion in 2025.

(h) Prior-period amounts have been revised to conform with the current presentation.

The weighted-average contractual interest rates for total long-term debt excluding structured notes accounted for at fair value were 2.89% and 3.13% as of December 31, 2020 and 2019, respectively. In order to modify exposure to interest rate and currency exchange rate movements, JPMorgan Chase utilizes derivative instruments, primarily interest rate and cross-currency interest rate swaps, in conjunction with some of its debt issuances. The use of these instruments modifies the Firm's interest expense on the associated debt. The modified weighted-average interest rates for total long-term debt, including the effects of related derivative instruments, were 1.58% and 3.19% as of December 31, 2020 and 2019, respectively.

JPMorgan Chase & Co. has guaranteed certain long-term debt of its subsidiaries, including structured notes. These guarantees rank on parity with the Firm's other unsecured and unsubordinated indebtedness. The amount of such guaranteed long-term debt and structured notes was $13.8 billion and $14.4 billion at December 31, 2020 and 2019, respectively.

The Firm's unsecured debt does not contain requirements that would call for an acceleration of payments, maturities or changes in the structure of the existing debt, provide any limitations on future borrowings or require additional collateral, based on unfavorable changes in the Firm's credit ratings, financial ratios, earnings or stock price.

Note 21 – Preferred stock

At December 31, 2020 and 2019, JPMorgan Chase was authorized to issue 200 million shares of preferred stock, in one or more series, with a par value of $1 per share. In the event of a liquidation or dissolution of the Firm, JPMorgan Chase's preferred stock then outstanding takes precedence over the Firm's common stock with respect to the payment of dividends and the distribution of assets.

The following is a summary of JPMorgan Chase's non-cumulative preferred stock outstanding as of December 31, 2020 and 2019.

	Shares[a]		Carrying value (in millions)						Dividend declared per share[c]			
	December 31,		December 31,			Contractual rate in effect at December 31,	Earliest redemption	Floating annualized rate of three-month LIBOR/Term	Year ended December 31,			
	2020	2019	2020	2019	Issue date	2020	date[b]	SOFR plus:	2020	2019	2018	
Fixed-rate:												
Series P	–	–	$ –	$ –	2/5/2013	– %	3/1/2018	NA	**$–**	$545.00	$545.00	
Series T	–	–	–	–	1/30/2014	–	3/1/2019	NA	–	167.50	670.00	
Series W	–	–	–	–	6/23/2014	–	9/1/2019	NA	–	472.50	630.00	
Series Y	–	143,000	–	1,430	2/12/2015	–	3/1/2020	NA	**153.13**	612.52	612.52	
Series AA	**142,500**	142,500	**1,425**	1,425	6/4/2015	**6.100**	9/1/2020	NA	**610.00**	610.00	610.00	
Series BB	**115,000**	115,000	**1,150**	1,150	7/29/2015	**6.150**	9/1/2020	NA	**615.00**	615.00	615.00	
Series DD	**169,625**	169,625	**1,696**	1,696	9/21/2018	**5.750**	12/1/2023	NA	**575.00**	575.00	111.81	(d)
Series EE	**185,000**	185,000	**1,850**	1,850	1/24/2019	**6.000**	3/1/2024	NA	**600.00**	511.67	NA	(e)
Series GG	**90,000**	90,000	**900**	900	11/7/2019	**4.750**	12/1/2024	NA	**506.67**	NA	NA	(f)
Fixed-to-floating-rate:												
Series I	**293,375**	293,375	**$ 2,934**	$ 2,934	4/23/2008	**LIBOR + 3.47%**	4/30/2018	LIBOR + 3.47%	**$428.03**	$593.23	$646.38	(g)
Series Q	**150,000**	150,000	**1,500**	1,500	4/23/2013	**5.150**	5/1/2023	LIBOR + 3.25	**515.00**	515.00	515.00	
Series R	**150,000**	150,000	**1,500**	1,500	7/29/2013	**6.000**	8/1/2023	LIBOR + 3.30	**600.00**	600.00	600.00	
Series S	**200,000**	200,000	**2,000**	2,000	1/22/2014	**6.750**	2/1/2024	LIBOR + 3.78	**675.00**	675.00	675.00	
Series U	**100,000**	100,000	**1,000**	1,000	3/10/2014	**6.125**	4/30/2024	LIBOR + 3.33	**612.50**	612.50	612.50	
Series V	**250,000**	250,000	**2,500**	2,500	6/9/2014	**LIBOR + 3.32%**	7/1/2019	LIBOR + 3.32	**436.85**	534.09	500.00	(h)
Series X	**160,000**	160,000	**1,600**	1,600	9/23/2014	**6.100**	10/1/2024	LIBOR + 3.33	**610.00**	610.00	610.00	
Series Z	**200,000**	200,000	**2,000**	2,000	4/21/2015	**LIBOR + 3.80%**	5/1/2020	LIBOR + 3.80	**453.52**	530.00	530.00	(i)
Series CC	**125,750**	125,750	**1,258**	1,258	10/20/2017	**4.625**	11/1/2022	LIBOR + 2.58	**462.50**	462.50	462.50	
Series FF	**225,000**	225,000	**2,250**	2,250	7/31/2019	**5.000**	8/1/2024	SOFR + 3.38	**500.00**	251.39	NA	(j)
Series HH	**300,000**	–	**3,000**	–	1/23/2020	**4.600**	2/1/2025	SOFR + 3.125	**470.22**	NA	NA	(k)
Series II	**150,000**	–	**1,500**	–	2/24/2020	**4.000**	4/1/2025	SOFR + 2.745	**341.11**	NA	NA	(l)
Total preferred stock	**3,006,250**	2,699,250	**$ 30,063**	$ 26,993								

(a) Represented by depositary shares.
(b) Fixed-to-floating rate notes convert to a floating rate at the earliest redemption date.
(c) Dividends are declared quarterly. Dividends are payable quarterly on fixed-rate preferred stock. Dividends are payable semiannually on fixed-to-floating-rate preferred stock while at a fixed rate, and payable quarterly after converting to a floating rate.
(d) Dividends in the amount of $111.81 per share were declared on December 1, 2018 and include dividends from the original issue date of September 21, 2018 through November 30, 2018.
(e) Dividends in the amount of $211.67 per share were declared on April 12,2019 and include dividends from the original issue date of January 24, 2019 through May 31, 2019. Dividends in the amount of $150.00 per share were declared thereafter on July 10, 2019 and October 9, 2019.
(f) No dividends were declared for Series GG from the original issue date of November 7, 2019 through December 31, 2019.
(g) The dividend rate for Series I preferred stock became floating and payable quarterly starting on April 30, 2018; prior to which the dividend rate was fixed at 7.90% or $395.00 per share payable semi annually.
(h) The dividend rate for Series V preferred stock became floating and payable quarterly starting on July 1, 2019; prior to which the dividend rate was fixed at 5% or $250.00 per share payable semi annually. The Firm declared a dividend of $144.11 and $139.98 per share on outstanding Series V preferred stock on August 15, 2019 and November 15, 2019, respectively.
(i) Prior to May 1, 2020, the dividend rate was fixed at 5.3%.
(j) Dividends in the amount of $126.39 per share were declared on September 9, 2019 and include dividends from the original issue date of July 31, 2019 through October 31, 2019. Dividends in the amount of $125.00 per share were declared thereafter on December 10, 2019.
(k) Dividends in the amount of $125.22 per share were declared on March 13, 2020 and include dividends from the original issue date of January 23, 2020 through April 30, 2020. Dividends in the amount of $115.00 per share were declared quarterly thereafter.
(l) Dividends in the amount of $141.11 per share were declared on May 15, 2020 and include dividends from the original issue date of February 24, 2020 through June 30, 2020. Dividends in the amount of $100.00 per share were declared quarterly thereafter.

Each series of preferred stock has a liquidation value and redemption price per share of $10,000, plus accrued but unpaid dividends. The aggregate liquidation value was $30.5 billion at December 31, 2020.

On March 1, 2020, the Firm redeemed all $1.43 billion of its 6.125% non-cumulative preferred stock, Series Y.

On December 1, 2019, the Firm redeemed all $900 million of its 5.45% non-cumulative preferred stock, Series P.

On October 30, 2019, the Firm redeemed $1.37 billion of its fixed-to-floating rate non-cumulative perpetual preferred stock, Series I.

On September 1, 2019, the Firm redeemed all $880 million of its 6.30% non-cumulative preferred stock, Series W.

On March 1, 2019, the Firm redeemed all $925 million of its 6.70% non-cumulative preferred stock, Series T.

Redemption rights

Each series of the Firm's preferred stock may be redeemed on any dividend payment date on or after the earliest redemption date for that series. All outstanding preferred stock series except Series I may also be redeemed following a "capital treatment event," as described in the terms of each series. Any redemption of the Firm's preferred stock is subject to non-objection from the Board of Governors of the Federal Reserve System (the "Federal Reserve").

Note 22 – Common stock

At December 31, 2020 and 2019, JPMorgan Chase was authorized to issue 9.0 billion shares of common stock with a par value of $1 per share.

Common shares issued (reissuances from treasury) by JPMorgan Chase during the years ended December 31, 2020, 2019 and 2018 were as follows.

Year ended December 31, (in millions)	2020	2019	2018
Total issued – balance at January 1	**4,104.9**	4,104.9	4,104.9
Treasury – balance at January 1	**(1,020.9)**	(829.1)	(679.6)
Repurchase	**(50.0)**	(213.0)	(181.5)
Reissuance:			
Employee benefits and compensation plans	**14.2**	20.4	21.7
Warrant exercise	**–**	–	9.4
Employee stock purchase plans	**1.2**	0.8	0.9
Total reissuance	**15.4**	21.2	32.0
Total treasury – balance at December 31	**(1,055.5)**	(1,020.9)	(829.1)
Outstanding at December 31	**3,049.4**	3,084.0	3,275.8

There were no warrants to purchase shares of common stock ("Warrants") outstanding at December 31, 2020 and December 31, 2019 as any Warrants that were not exercised on or before October 29, 2018 have expired.

On March 15, 2020, in response to the economic disruptions caused by the COVID-19 pandemic, the Firm temporarily suspended repurchases of its common stock. Subsequently, the Federal Reserve directed all large banks, including the Firm, to discontinue net share repurchases through the end of 2020. On December 18, 2020, the Federal Reserve announced that all large banks, including the Firm, could resume share repurchases commencing in the first quarter of 2021, subject to certain restrictions. The Firm's Board of Directors has authorized a new common share repurchase program for up to $30 billion.

The following table sets forth the Firm's repurchases of common stock for the years ended December 31, 2020, 2019 and 2018. There were no Warrants repurchased during 2018.

Year ended December 31, (in millions)	2020	2019	2018
Total number of shares of common stock repurchased	**50.0**	213.0	181.5
Aggregate purchase price of common stock repurchases	**$ 6,397**	$24,121	$19,983

The authorization to repurchase common shares is utilized at management's discretion, and the timing of purchases and the exact amount of common shares that may be repurchased is subject to various factors, including market conditions; legal and regulatory considerations affecting the amount and timing of repurchase activity; the Firm's capital position (taking into account goodwill and intangibles); internal capital generation; and alternative investment opportunities. The repurchase program does not include specific price targets or timetables; may be suspended by management at any time; and may be executed through open market purchases or privately negotiated transactions, or utilizing Rule 10b5-1 plans, which are written trading plans that the Firm may enter into from time to time under Rule 10b5-1 of the Securities Exchange Act of 1934 and which allow the Firm to repurchase its common shares during periods when it may otherwise not be repurchasing common shares —for example, during internal trading blackout periods.

As of December 31, 2020, approximately 62.1 million shares of common stock were reserved for issuance under various employee incentive, compensation, option and stock purchase plans, and directors' compensation plans.

Note 23 – Earnings per share

Basic earnings per share ("EPS") is calculated using the two-class method. Under the two-class method, all earnings (distributed and undistributed) are allocated to common stock and participating securities. JPMorgan Chase grants RSUs under its share-based compensation programs, predominantly all of which entitle recipients to receive nonforfeitable dividends during the vesting period on a basis equivalent to dividends paid to holders of the Firm's common stock. These unvested RSUs meet the definition of participating securities based on their respective rights to receive nonforfeitable dividends, and they are treated as a separate class of securities in computing basic EPS. Participating securities are not included as incremental shares in computing diluted EPS; refer to Note 9 for additional information.

Diluted EPS incorporates the potential impact of contingently issuable shares, including awards which require future service as a condition of delivery of the underlying common stock. Diluted EPS is calculated under both the two-class and treasury stock methods, and the more dilutive amount is reported. For each of the periods presented in the table below, diluted EPS calculated under the two-class method was more dilutive.

The following table presents the calculation of net income applicable to common stockholders and basic and diluted EPS for the years ended December 31, 2020, 2019 and 2018.

Year ended December 31, (in millions, except per share amounts)	**2020**	2019	2018
Basic earnings per share			
Net income	**$ 29,131**	$ 36,431	$ 32,474
Less: Preferred stock dividends	**1,583**	1,587	1,551
Net income applicable to common equity	**27,548**	34,844	30,923
Less: Dividends and undistributed earnings allocated to participating securities	**138**	202	214
Net income applicable to common stockholders	**$ 27,410**	$ 34,642	$ 30,709
Total weighted-average basic shares outstanding	**3,082.4**	3,221.5	3,396.4
Net income per share	**$ 8.89**	$ 10.75	$ 9.04
Diluted earnings per share			
Net income applicable to common stockholders	**$ 27,410**	$ 34,642	$ 30,709
Total weighted-average basic shares outstanding	**3,082.4**	3,221.5	3,396.4
Add: Dilutive impact of SARs and employee stock options, unvested PSUs and nondividend-earning RSUs, and warrants	**5.0**	8.9	17.6
Total weighted-average diluted shares outstanding	**3,087.4**	3,230.4	3,414.0
Net income per share	**$ 8.88**	$ 10.72	$ 9.00

Note 24 – Accumulated other comprehensive income/(loss)

AOCI includes the after-tax change in unrealized gains and losses on investment securities, foreign currency translation adjustments (including the impact of related derivatives), fair value changes of excluded components on fair value hedges, cash flow hedging activities, net loss and prior service costs/(credit) related to the Firm's defined benefit pension and OPEB plans, and fair value option-elected liabilities arising from changes in the Firm's own credit risk (DVA).

Year ended December 31, (in millions)	Unrealized gains/(losses) on investment securities	Translation adjustments, net of hedges	Fair value hedges	Cash flow hedges	Defined benefit pension and OPEB plans	DVA on fair value option elected liabilities	Accumulated other comprehensive income/(loss)
Balance at December 31, 2017	$ 2,164	$ (470)	$ –	$ 76	$ (1,521)	$ (368)	$ (119)
Cumulative effect of changes in accounting principles[(a)]	896	(277)	(54)	16	(414)	(79)	88
Net change	(1,858)	20	(107)	(201)	(373)	1,043	(1,476)
Balance at December 31, 2018	$ 1,202	$ (727)	$ (161)	$ (109)	$ (2,308)	$ 596	$ (1,507)
Net change	2,855	20	30	172	964	(965)	3,076
Balance at December 31, 2019	$ 4,057	$ (707)	$ (131)	$ 63	$ (1,344)	$ (369)	$ 1,569
Net change	**4,123**	**234**	**19**	**2,320**	**212**	**(491)**	**6,417**
Balance at December 31, 2020	**$ 8,180** [(b)]	**$ (473)**	**$ (112)**	**$ 2,383**	**$ (1,132)**	**$ (860)**	**$ 7,986**

(a) Represents the adjustment to AOCI as a result of the accounting standards adopted in the first quarter of 2018. Refer to Note 1 for additional information.
(b) Includes after-tax net unamortized unrealized gains of $3.3 billion related to AFS securities that have been transferred to HTM. Refer to Note 10 for further information.

The following table presents the pre-tax and after-tax changes in the components of OCI.

Year ended December 31, (in millions)	2020 Pre-tax	2020 Tax effect	2020 After-tax	2019 Pre-tax	2019 Tax effect	2019 After-tax	2018 Pre-tax	2018 Tax effect	2018 After-tax
Unrealized gains/(losses) on investment securities:									
Net unrealized gains/(losses) arising during the period	**$ 6,228**	**$ (1,495)**	**$ 4,733**	$ 4,025	$ (974)	$ 3,051	$ (2,825)	$ 665	$ (2,160)
Reclassification adjustment for realized (gains)/losses included in net income[(a)]	**(802)**	**192**	**(610)**	(258)	62	(196)	395	(93)	302
Net change	**5,426**	**(1,303)**	**4,123**	3,767	(912)	2,855	(2,430)	572	(1,858)
Translation adjustments[(b)]:									
Translation	**1,407**	**(103)**	**1,304**	(49)	33	(16)	(1,078)	156	(922)
Hedges	**(1,411)**	**341**	**(1,070)**	46	(10)	36	1,236	(294)	942
Net change	**(4)**	**238**	**234**	(3)	23	20	158	(138)	20
Fair value hedges, net change[(c)]:	**25**	**(6)**	**19**	39	(9)	30	(140)	33	(107)
Cash flow hedges:									
Net unrealized gains/(losses) arising during the period	**3,623**	**(870)**	**2,753**	122	(28)	94	(245)	58	(187)
Reclassification adjustment for realized (gains)/losses included in net income[(d)]	**(570)**	**137**	**(433)**	103	(25)	78	(18)	4	(14)
Net change	**3,053**	**(733)**	**2,320**	225	(53)	172	(263)	62	(201)
Defined benefit pension and OPEB plans, net change:	**214**	**(2)**	**212**	1,157	(193)	964	(450)	77	(373)
DVA on fair value option elected liabilities, net change:	**$ (648)**	**$ 157**	**$ (491)**	$ (1,264)	$ 299	$ (965)	$ 1,364	$ (321)	$ 1,043
Total other comprehensive income/(loss)	**$ 8,066**	**$ (1,649)**	**$ 6,417**	$ 3,921	$ (845)	$ 3,076	$ (1,761)	$ 285	$ (1,476)

(a) The pre-tax amount is reported in Investment securities gains/(losses) in the Consolidated statements of income.

(b) Reclassifications of pre-tax realized gains/(losses) on translation adjustments and related hedges are reported in other income/expense in the Consolidated statements of income. During the year ended December 31, 2020, the Firm reclassified a net pre-tax gain of $6 million to other income related to the liquidation of legal entities, $3 million related to net investment hedge gains and $3 million related to cumulative translation adjustments. During the year ended December 31, 2019, the Firm reclassified net pre-tax gains of $7 million to other income and $1 million to other expense, respectively. These amounts, which related to the liquidation of certain legal entities, are comprised of $18 million related to net investment hedge gains and $10 million related to cumulative translation adjustments. During the year ended December 31, 2018, the Firm reclassified a net pre-tax loss of $168 million to other expense related to the liquidation of certain legal entities, $17 million related to net investment hedge losses and $151 million related to cumulative translation adjustments.

(c) Represents changes in fair value of cross-currency swaps attributable to changes in cross-currency basis spreads, which are excluded from the assessment of hedge effectiveness and recorded in other comprehensive income. The initial cost of cross-currency basis spreads is recognized in earnings as part of the accrual of interest on the cross-currency swap.

(d) The pre-tax amounts are primarily recorded in noninterest revenue, net interest income and compensation expense in the Consolidated statements of income.

Note 25 – Income taxes

JPMorgan Chase and its eligible subsidiaries file a consolidated U.S. federal income tax return. JPMorgan Chase uses the asset and liability method to provide income taxes on all transactions recorded in the Consolidated Financial Statements. This method requires that income taxes reflect the expected future tax consequences of temporary differences between the carrying amounts of assets or liabilities for book and tax purposes. Accordingly, a deferred tax asset or liability for each temporary difference is determined based on the tax rates that the Firm expects to be in effect when the underlying items of income and expense are realized. JPMorgan Chase's expense for income taxes includes the current and deferred portions of that expense. A valuation allowance is established to reduce deferred tax assets to the amount the Firm expects to realize.

Due to the inherent complexities arising from the nature of the Firm's businesses, and from conducting business and being taxed in a substantial number of jurisdictions, significant judgments and estimates are required to be made. Agreement of tax liabilities between JPMorgan Chase and the many tax jurisdictions in which the Firm files tax returns may not be finalized for several years. Thus, the Firm's final tax-related assets and liabilities may ultimately be different from those currently reported.

Effective tax rate and expense

The following table presents a reconciliation of the applicable statutory U.S. federal income tax rate to the effective tax rate.

Effective tax rate

Year ended December 31,	2020	2019	2018
Statutory U.S. federal tax rate	**21.0 %**	21.0 %	21.0 %
Increase/(decrease) in tax rate resulting from:			
U.S. state and local income taxes, net of U.S. federal income tax benefit	**2.5**	3.5	4.0
Tax-exempt income	**(1.6)**	(1.4)	(1.5)
Non-U.S. earnings	**1.4**	1.8	0.6
Business tax credits	**(6.3)**	(4.4)	(3.5)
Tax audit resolutions	**–**	(2.3)	(0.1)
Impact of the TCJA[a]	**–**	–	(0.7)
Other, net	**0.7**	–	0.5
Effective tax rate	**17.7 %**	18.2 %	20.3 %

(a) Represents changes in the estimates related to the remeasurement of certain deferred taxes and the deemed repatriation tax on non-U.S. earnings under SEC Staff Accounting Bulletin No. 118 which was completed in 2018.

The following table reflects the components of income tax expense/(benefit) included in the Consolidated statements of income.

Income tax expense/(benefit)

Year ended December 31, (in millions)	2020	2019	2018
Current income tax expense/(benefit)			
U.S. federal	**$ 5,759**	$ 3,284	$ 2,854
Non-U.S.	**2,705**	2,103	2,077
U.S. state and local	**1,793**	1,778	1,638
Total current income tax expense/(benefit)	**10,257**	7,165	6,569
Deferred income tax expense/(benefit)			
U.S. federal	**(3,184)**	709	1,359
Non-U.S.	**(126)**	20	(93)
U.S. state and local	**(671)**	220	455
Total deferred income tax expense/(benefit)	**(3,981)**	949	1,721
Total income tax expense	**$ 6,276**	$ 8,114	$ 8,290

Total income tax expense includes $72 million, $1.1 billion and $54 million of tax benefits recorded in 2020, 2019, and 2018, respectively, resulting from the resolution of tax audits.

Tax effect of items recorded in stockholders' equity

The preceding table does not reflect the tax effect of certain items that are recorded each period directly in stockholders' equity. The tax effect of all items recorded directly to stockholders' equity resulted in a decrease of $827 million and $862 million in 2020 and 2019, respectively, and an increase of $172 million in 2018.

Results from Non-U.S. earnings

The following table presents the U.S. and non-U.S. components of income before income tax expense.

Year ended December 31, (in millions)	2020	2019	2018
U.S.	**$ 26,904**	$ 36,670	$ 33,052
Non-U.S.[a]	**8,503**	7,875	7,712
Income before income tax expense	**$ 35,407**	$ 44,545	$ 40,764

(a) For purposes of this table, non-U.S. income is defined as income generated from operations located outside the U.S.

The Firm will recognize any U.S. income tax expense it may incur on global intangible low tax income as income tax expense in the period in which the tax is incurred.

Affordable housing tax credits

The Firm recognized $1.5 billion of tax credits and other tax benefits associated with investments in affordable housing projects within income tax expense for each of the three years ended 2020, 2019 and 2018. The amount of amortization of such investments reported in income tax expense was $1.2 billion, $1.1 billion and $1.2 billion, respectively. The carrying value of these investments, which are reported in other assets on the Firm's Consolidated balance sheets, was $9.7 billion and $8.6 billion at December 31, 2020 and 2019, respectively. The amount of commitments related to these investments, which are reported in accounts payable and other liabilities on the Firm's Consolidated balance sheets, was $3.8 billion and $2.8 billion at December 31, 2020 and 2019, respectively.

Deferred taxes

Deferred income tax expense/(benefit) results from differences between assets and liabilities measured for financial reporting purposes versus income tax return purposes. Deferred tax assets are recognized if, in management's judgment, their realizability is determined to be more likely than not. If a deferred tax asset is determined to be unrealizable, a valuation allowance is established. The significant components of deferred tax assets and liabilities are reflected in the following table.

December 31, (in millions)	2020	2019
Deferred tax assets		
Allowance for loan losses	**$ 7,270**	$ 3,400
Employee benefits	**1,104**	1,039
Accrued expenses and other	**3,332**	2,767
Non-U.S. operations	**849**	949
Tax attribute carryforwards	**757**	605
Gross deferred tax assets	**13,312**	8,760
Valuation allowance	**(560)**	(557)
Deferred tax assets, net of valuation allowance	**$ 12,752**	$ 8,203
Deferred tax liabilities		
Depreciation and amortization	**$ 3,329**	$ 2,852
Mortgage servicing rights, net of hedges	**2,184**	2,354
Leasing transactions	**5,124**	5,598
Other, net	**6,025**	4,683
Gross deferred tax liabilities	**16,662**	15,487
Net deferred tax (liabilities)/assets	**$ (3,910)**	$ (7,284)

JPMorgan Chase has recorded deferred tax assets of $757 million at December 31, 2020, in connection with U.S. federal and non-U.S. NOL carryforwards, FTC carryforwards, and state and local capital loss carryforwards. At December 31, 2020, total U.S. federal NOL carryforwards were $799 million, non-U.S. NOL carryforwards were $139 million, FTC carryforwards were $444 million, state and local capital loss carryforwards were $1.1 billion, and other federal tax attributes were $393 million. If not utilized, a portion of the U.S. federal NOL carryforwards and other U.S. federal tax attributes will expire between 2022 and 2037 whereas others have an unlimited carryforward period. Similarly, certain non-U.S. NOL carryforwards will expire between 2026 and 2036 whereas others have an unlimited carryforward period. The FTC carryforwards will expire between 2029 and 2030, and the state and local capital loss carryforwards will expire between 2021 and 2022.

The valuation allowance at December 31, 2020, was due to the state and local capital loss carryforwards, FTC carryforwards, and certain non-U.S. deferred tax assets, including NOL carryforwards.

Unrecognized tax benefits

At December 31, 2020, 2019 and 2018, JPMorgan Chase's unrecognized tax benefits, excluding related interest expense and penalties, were $4.3 billion, $4.0 billion and $4.9 billion, respectively, of which $3.1 billion, $2.8 billion and $3.8 billion, respectively, if recognized, would reduce the annual effective tax rate. Included in the amount of unrecognized tax benefits are certain items that would not affect the effective tax rate if they were recognized in the Consolidated statements of income. These unrecognized items include the tax effect of certain temporary differences, the portion of gross state and local unrecognized tax benefits that would be offset by the benefit from associated U.S. federal income tax deductions, and the portion of gross non-U.S. unrecognized tax benefits that would have offsets in other jurisdictions. JPMorgan Chase is presently under audit by a number of taxing authorities, most notably by the Internal Revenue Service as summarized in the Tax examination status table below. As JPMorgan Chase is presently under audit by a number of taxing authorities, it is reasonably possible that over the next 12 months the resolution of these examinations may increase or decrease the gross balance of unrecognized tax benefits by as much as approximately $300 million. Upon settlement of an audit, the change in the unrecognized tax benefit would result from payment or income statement recognition.

The following table presents a reconciliation of the beginning and ending amount of unrecognized tax benefits.

Year ended December 31, (in millions)	2020	2019	2018
Balance at January 1,	**$ 4,024**	$ 4,861	$ 4,747
Increases based on tax positions related to the current period	**685**	871	980
Increases based on tax positions related to prior periods	**362**	10	649
Decreases based on tax positions related to prior periods	**(705)**	(706)	(1,249)
Decreases related to cash settlements with taxing authorities	**(116)**	(1,012)	(266)
Balance at December 31,	**$ 4,250**	$ 4,024	$ 4,861

After-tax interest expense/(benefit) and penalties related to income tax liabilities recognized in income tax expense were $147 million, $(52) million and $192 million in 2020, 2019 and 2018, respectively.

At December 31, 2020 and 2019, in addition to the liability for unrecognized tax benefits, the Firm had accrued $966 million and $817 million, respectively, for income tax-related interest and penalties.

Tax examination status

JPMorgan Chase is continually under examination by the Internal Revenue Service, by taxing authorities throughout the world, and by many state and local jurisdictions throughout the U.S. The following table summarizes the status of significant income tax examinations of JPMorgan Chase and its consolidated subsidiaries as of December 31, 2020.

	Periods under examination	Status
JPMorgan Chase – U.S.	2009 – 2013	Field examination of amended returns
JPMorgan Chase – U.S.	2014 - 2016	Field Examination
JPMorgan Chase – New York State	2012 - 2014	Field Examination
JPMorgan Chase – New York City	2012 - 2014	Field Examination
JPMorgan Chase – California	2011 – 2012	Field Examination
JPMorgan Chase – U.K.	2006 – 2018	Field examination of certain select entities

Note 26 – Restricted cash, other restricted assets and intercompany funds transfers

Restricted cash and other restricted assets

Certain of the Firm's cash and other assets are restricted as to withdrawal or usage. These restrictions are imposed by various regulatory authorities based on the particular activities of the Firm's subsidiaries.

The business of JPMorgan Chase Bank, N.A. is subject to examination and regulation by the OCC. The Bank is a member of the U.S. Federal Reserve System, and its deposits in the U.S. are insured by the FDIC, subject to applicable limits.

The Firm is required to maintain cash reserves at certain non-US central banks.

The Firm is also subject to rules and regulations established by other U.S. and non U.S. regulators. As part of its compliance with the respective regulatory requirements, the Firm's broker-dealers (principally J.P. Morgan Securities LLC in the U.S and J.P. Morgan Securities plc in the U.K.) are subject to certain restrictions on cash and other assets.

The following table presents the components of the Firm's restricted cash:

December 31, (in billions)	**2020**	2019
Cash reserves – Federal Reserve Banks[a]	**$ —**	$ 26.6
Segregated for the benefit of securities and cleared derivative customers	**19.3**	16.0
Cash reserves at non-U.S. central banks and held for other general purposes	**5.1**	3.9
Total restricted cash[b]	**$ 24.4**	$ 46.5

(a) Effective March 26, 2020, the Federal Reserve eliminated reserve requirements for depository institutions

(b) Comprises $22.7 billion and $45.3 billion in deposits with banks, and $1.7 billion and $1.2 billion in cash and due from banks on the Consolidated balance sheets as of December 31, 2020 and 2019, respectively.

Also, as of December 31, 2020 and 2019, the Firm had the following other restricted assets:

- Cash and securities pledged with clearing organizations for the benefit of customers of $37.2 billion and $24.7 billion, respectively.
- Securities with a fair value of $1.3 billion and $8.8 billion, respectively, were also restricted in relation to customer activity.

Intercompany funds transfers

Restrictions imposed by U.S. federal law prohibit JPMorgan Chase & Co. ("Parent Company") and certain of its affiliates from borrowing from banking subsidiaries unless the loans are secured in specified amounts. Such secured loans provided by any banking subsidiary to the Parent Company or to any particular affiliate, together with certain other transactions with such affiliate (collectively referred to as "covered transactions"), are generally limited to 10% of the banking subsidiary's total capital, as determined by the risk-based capital guidelines; the aggregate amount of covered transactions between any banking subsidiary and all of its affiliates is limited to 20% of the banking subsidiary's total capital.

The Parent Company's two principal subsidiaries are JPMorgan Chase Bank, N.A. and JPMorgan Chase Holdings LLC, an intermediate holding company (the "IHC"). The IHC holds the stock of substantially all of JPMorgan Chase's subsidiaries other than JPMorgan Chase Bank, N.A. and its subsidiaries. The IHC also owns other assets and owes intercompany indebtedness to the holding company. The Parent Company is obligated to contribute to the IHC substantially all the net proceeds received from securities issuances (including issuances of senior and subordinated debt securities and of preferred and common stock).

The principal sources of income and funding for the Parent Company are dividends from JPMorgan Chase Bank, N.A. and dividends and extensions of credit from the IHC. In addition to dividend restrictions set forth in statutes and regulations, the Federal Reserve, the OCC and the FDIC have authority under the Financial Institutions Supervisory Act to prohibit or to limit the payment of dividends by the banking organizations they supervise, including the Parent Company and its subsidiaries that are banks or bank holding companies, if, in the banking regulator's opinion, payment of a dividend would constitute an unsafe or unsound practice in light of the financial condition of the banking organization. The IHC is prohibited from paying dividends or extending credit to the Parent Company if certain capital or liquidity "thresholds" are breached or if limits are otherwise imposed by the Parent Company's management or Board of Directors.

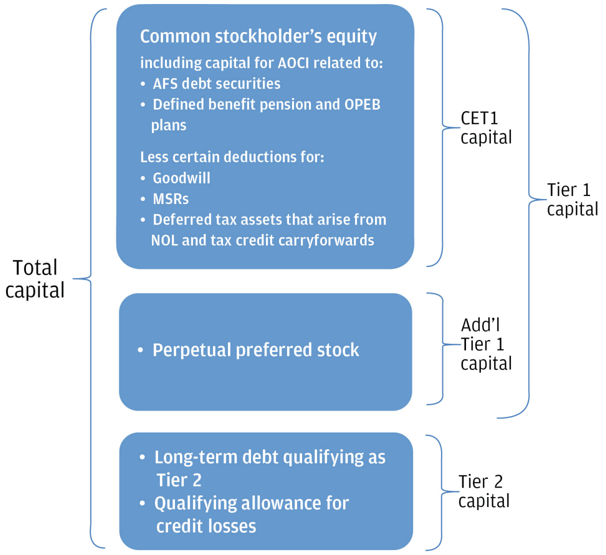
At January 1, 2021, the Parent Company's banking subsidiaries could pay, in the aggregate, approximately $13 billion in dividends to their respective bank holding companies without the prior approval of their relevant banking regulators. The capacity to pay dividends in 2021 will be supplemented by the banking subsidiaries' earnings during the year.

Note 27 – Regulatory capital

The Federal Reserve establishes capital requirements, including well-capitalized standards, for the consolidated financial holding company. The OCC establishes similar minimum capital requirements and standards for the Firm's principal IDI subsidiary, JPMorgan Chase Bank, N.A.

The capital rules under Basel III establish minimum capital ratios and overall capital adequacy standards for large and internationally active U.S. bank holding companies and banks, including the Firm and its IDI subsidiaries, including JPMorgan Chase Bank, N.A. Two comprehensive approaches are prescribed for calculating RWA: a standardized approach ("Basel III Standardized"), and an advanced approach ("Basel III Advanced"). For each of the risk-based capital ratios, the capital adequacy of the Firm and JPMorgan Chase Bank, N.A. is evaluated against the lower of the Standardized or Advanced approaches compared to their respective minimum capital ratios.

The three components of regulatory capital under the Basel III rules are as illustrated below:



Under the risk-based capital and leverage-based guidelines of the Federal Reserve, JPMorgan Chase is required to maintain minimum ratios for CET1 capital, Tier 1 capital, Total capital, Tier 1 leverage and the SLR. Failure to meet these minimum requirements could cause the Federal Reserve to take action. IDI subsidiaries are also subject to these capital requirements established by their respective primary regulators.

The following table presents the minimum and well-capitalized ratios to which the Firm and its IDI subsidiaries were subject as of December 31, 2020 and 2019.

	Standardized Minimum capital ratios		Advanced Minimum capital ratios		Well-capitalized ratios	
	BHC[a][b][c]	IDI[c][d]	BHC[a][c]	IDI[c][d]	BHC[e]	IDI[f]
Capital ratios						
CET1 capital	11.3 %	7.0 %	10.5 %	7.0 %	NA	6.5 %
Tier 1 capital	12.8	8.5	12.0	8.5	6.0	8.0
Total capital	14.8	10.5	14.0	10.5	10.0	10.0
Tier 1 leverage	4.0	4.0	4.0	4.0	NA	5.0
SLR	NA	NA	5.0	6.0	NA	6.0

Note: The table above is as defined by the regulations issued by the Federal Reserve, OCC and FDIC and to which the Firm and its IDI subsidiaries are subject.

(a) Represents the minimum capital ratios applicable to the Firm. The CET1, Tier 1 and Total capital minimum capital ratios each include a respective minimum requirement plus a GSIB surcharge of 3.5% as calculated under Method 2; plus a 3.3% SCB for Basel III Standardized ratios and a fixed 2.5% capital conservation buffer for Basel III Advanced ratios. The countercyclical buffer is currently set to 0% by the federal banking agencies.
(b) For the period ended December 31, 2019, the CET1, Tier 1, Total, Tier 1 leverage and SLR minimum capital ratios under Basel III Standardized applicable to the Firm were 10.5%, 12.0%, 14.0%, 4.0%, and 5.0%, respectively.
(c) Represents minimum SLR requirement of 3.0%, as well as supplementary leverage buffer requirements of 2.0% and 3.0% for BHC and IDI, respectively.
(d) Represents requirements for JPMorgan Chase's IDI subsidiaries. The CET1, Tier 1 and Total capital minimum capital ratios include a fixed capital conservation buffer requirement of 2.5% that is applicable to the IDI subsidiaries. The IDI subsidiaries are not subject to the GSIB surcharge.
(e) Represents requirements for bank holding companies pursuant to regulations issued by the Federal Reserve.
(f) Represents requirements for IDI subsidiaries pursuant to regulations issued under the FDIC Improvement Act.

Current Expected Credit Losses

Effective January 1, 2020, the Firm adopted the Financial Instruments – Credit Losses guidance under U.S. GAAP. As permitted under the U.S. capital rules issued by the federal banking agencies in 2019, the Firm initially elected to phase-in the January 1, 2020 ("day 1") CECL adoption impact to retained earnings of $2.7 billion to CET1 capital, at 25% per year in each of 2020 to 2023. As part of their response to the impact of the COVID-19 pandemic, on March 31, 2020, the federal banking agencies issued an interim final rule (issued as final on August 26, 2020) that provided the option to delay the effects of CECL on regulatory capital for two years, followed by a three-year transition period.

The final rule provides a uniform approach for estimating the effects of CECL compared to the legacy incurred loss model during the first two years of the transition period (the "day 2" transition amount), whereby the Firm may exclude from CET1 capital 25% of the change in the allowance for credit losses (excluding allowances on PCD loans). The cumulative day 2 transition amount as at December 31, 2021 that is not recognized in CET1 capital, as well as the $2.7 billion day 1 impact, will be phased into CET1 capital at 25% per year beginning January 1, 2022. The Firm has elected to apply the CECL capital transition provisions, and accordingly, for the year ended December 31, 2020, the capital metrics of the Firm exclude $5.7 billion, which is the $2.7 billion day 1 impact to retained earnings and 25% of the $12.2 billion increase in the allowance for credit losses (excluding allowances on PCD loans).

The impacts of the CECL capital transition provisions have also been incorporated into Tier 2 capital, adjusted average assets, and total leverage exposure. Refer to Note 1 for further information on the CECL accounting guidance.

The following tables present the risk-based and leverage-based capital metrics for JPMorgan Chase and JPMorgan Chase Bank, N.A. under both the Basel III Standardized and Basel III Advanced Approaches. As of December 31, 2020, the capital metrics are presented applying the CECL capital transition provisions. As of December 31, 2020 and 2019, JPMorgan Chase and JPMorgan Chase Bank, N.A. were well-capitalized and met all capital requirements to which each was subject.

December 31, 2020 (in millions, except ratios)	Basel III Standardized JPMorgan Chase & Co.[c]	Basel III Standardized JPMorgan Chase Bank, N.A.[c]	Basel III Advanced JPMorgan Chase & Co.[c]	Basel III Advanced JPMorgan Chase Bank, N.A.[c]
Risk-based capital metrics:				
CET1 capital	**$ 205,078**	**$ 234,235**	**$ 205,078**	**$ 234,235**
Tier 1 capital	**234,844**	**234,237**	**234,844**	**234,237**
Total capital	**269,923**	**252,045**	**257,228**	**239,673**
Risk-weighted assets	**1,560,609**	**1,492,138**	**1,484,431**	**1,343,185**
CET1 capital ratio	**13.1 %**	**15.7 %**	**13.8 %**	**17.4 %**
Tier 1 capital ratio	**15.0**	**15.7**	**15.8**	**17.4**
Total capital ratio	**17.3**	**16.9**	**17.3**	**17.8**
Leverage-based capital metrics:				
Adjusted average assets[a]	**$ 3,353,319**	**$ 2,970,285**	**$ 3,353,319**	**$ 2,970,285**
Tier 1 leverage ratio	**7.0 %**	**7.9 %**	**7.0 %**	**7.9 %**
Total leverage exposure[b]	**NA**	**NA**	**$ 3,401,542**	**$ 3,688,797**
SLR[b]	**NA**	**NA**	**6.9 %**	**6.3 %**

December 31, 2019 (in millions, except ratios)	Basel III Standardized JPMorgan Chase & Co.	Basel III Standardized JPMorgan Chase Bank, N.A.	Basel III Advanced JPMorgan Chase & Co.	Basel III Advanced JPMorgan Chase Bank, N.A.
Risk-based capital metrics:				
CET1 capital	$ 187,753	$ 206,848	$ 187,753	$ 206,848
Tier 1 capital	214,432	206,851	214,432	206,851
Total capital	242,589	224,390	232,112	214,091
Risk-weighted assets	1,515,869	1,457,689	1,397,878	1,269,991
CET1 capital ratio	12.4 %	14.2 %	13.4 %	16.3 %
Tier 1 capital ratio	14.1	14.2	15.3	16.3
Total capital ratio	16.0	15.4	16.6	16.9
Leverage-based capital metrics:				
Adjusted average assets[a]	$ 2,730,239	$ 2,353,432	$ 2,730,239	$ 2,353,432
Tier 1 leverage ratio	7.9 %	8.8 %	7.9 %	8.8 %
Total leverage exposure	NA	NA	$ 3,423,431	$ 3,044,509
SLR	NA	NA	6.3 %	6.8 %

(a) Adjusted average assets, for purposes of calculating the leverage ratio, includes total quarterly average assets adjusted for on-balance sheet assets that are subject to deduction from Tier 1 capital, predominantly goodwill and other intangible assets.
(b) As of December 31, 2020, JPMorgan Chase's total leverage exposure for purposes of calculating the SLR, excludes on-balance sheet amounts of U.S. Treasury securities and deposits at Federal Reserve Banks, as provided by the interim final rule issued by the Federal Reserve on April 1, 2020. On June 1, 2020, the Federal Reserve, OCC and FDIC issued an interim final rule that provides IDI subsidiaries with an option to apply this temporary exclusion subject to certain restrictions. As of December 31, 2020, JPMorgan Chase Bank, N.A. has not elected to apply this exclusion.
(c) As of December 31, 2020, the capital metrics for the Firm reflect the exclusion of assets purchased from money market mutual fund clients pursuant to nonrecourse advances provided under the MMLF. Additionally, loans originated under the PPP for the Firm and JPMorgan Chase Bank, N.A. receive a zero percent risk weight.

Note 28 – Off–balance sheet lending-related financial instruments, guarantees, and other commitments

JPMorgan Chase provides lending-related financial instruments (e.g., commitments and guarantees) to address the financing needs of its customers and clients. The contractual amount of these financial instruments represents the maximum possible credit risk to the Firm should the customer or client draw upon the commitment or the Firm be required to fulfill its obligation under the guarantee, and should the customer or client subsequently fail to perform according to the terms of the contract. Most of these commitments and guarantees have historically been refinanced, extended, cancelled, or expired without being drawn or a default occurring. As a result, the total contractual amount of these instruments is not, in the Firm's view, representative of its expected future credit exposure or funding requirements.

To provide for expected credit losses in wholesale and certain consumer lending-related commitments, an allowance for credit losses on lending-related commitments is maintained. Refer to Note 13 for further information regarding the allowance for credit losses on lending-related commitments, including the impact of the Firm's adoption of CECL accounting guidance on January 1, 2020. The following table summarizes the contractual amounts and carrying values of off-balance sheet lending-related financial instruments, guarantees and other commitments at December 31, 2020 and 2019. The amounts in the table below for credit card and home equity lending-related commitments represent the total available credit for these products. The Firm has not experienced, and does not anticipate, that all available lines of credit for these products will be utilized at the same time. The Firm can reduce or cancel credit card lines of credit by providing the borrower notice or, in some cases as permitted by law, without notice. In addition, the Firm typically closes credit card lines when the borrower is 60 days or more past due. The Firm may reduce or close HELOCs when there are significant decreases in the value of the underlying property, or when there has been a demonstrable decline in the creditworthiness of the borrower.

In conjunction with the adoption of CECL, the Firm reclassified risk-rated loans and lending-related commitments from the consumer, excluding credit card portfolio segment to the wholesale portfolio segment, to align with the methodology applied in determining the allowance. Prior-period amounts have been revised to conform with the current presentation. Refer to Note 1 for further information.

Off–balance sheet lending-related financial instruments, guarantees and other commitments

	Contractual amount						Carrying value[(j)]	
	2020					2019	2020	2019
By remaining maturity at December 31, (in millions)	Expires in 1 year or less	Expires after 1 year through 3 years	Expires after 3 years through 5 years	Expires after 5 years	Total	Total		
Lending-related								
Consumer, excluding credit card:								
Residential Real Estate[(a)]	$ 26,788	$ 1,597	$ 3,962	$ 13,700	$ 46,047	$ 30,217	148	12
Auto and other	10,471	1	8	792	11,272	9,952	–	–
Total consumer, excluding credit card	37,259	1,598	3,970	14,492	57,319	40,169	148	12
Credit card[(b)]	658,506	–	–	–	658,506	650,720	–	–
Total consumer[(b)(c)]	695,765	1,598	3,970	14,492	715,825	690,889	148	12
Wholesale:								
Other unfunded commitments to extend credit[(d)(e)]	96,490	174,335	128,736	16,267	415,828	380,307	2,148	952
Standby letters of credit and other financial guarantees[(d)]	17,478	7,986	4,051	1,467	30,982	34,242	443	618
Other letters of credit[(d)]	2,982	45	26	–	3,053	2,961	14	4
Total wholesale[(c)]	116,950	182,366	132,813	17,734	449,863	417,510	2,605	1,574
Total lending-related	$ 812,715	$ 183,964	$ 136,783	$ 32,226	$ 1,165,688	$1,108,399	$ 2,753	$ 1,586
Other guarantees and commitments								
Securities lending indemnification agreements and guarantees[(f)]	$ 250,418	$ –	$ –	$ –	$ 250,418	$ 204,827	$ –	$ –
Derivatives qualifying as guarantees	2,489	541	12,182	39,203	54,415	53,089	322	159
Unsettled resale and securities borrowed agreements	95,084	1,764	–	–	96,848	117,951	2	–
Unsettled repurchase and securities loaned agreements	104,289	612	–	–	104,901	73,351	(1)	–
Loan sale and securitization-related indemnifications:								
Mortgage repurchase liability	NA	NA	NA	NA	NA	NA	84	59
Loans sold with recourse	NA	NA	NA	NA	889	944	23	27
Exchange & clearing house guarantees and commitments[(g)]	142,003	–	–	–	142,003	206,432	–	–
Other guarantees and commitments[(e)(h)]	2,457	574	758	2,541	6,330	6,334 [(i)]	52	(66)

(a) Includes certain commitments to purchase loans from correspondents.
(b) Also includes commercial card lending-related commitments primarily in CB and CIB.
(c) Predominantly all consumer and wholesale lending-related commitments are in the U.S.
(d) At December 31, 2020 and 2019, reflected the contractual amount net of risk participations totaling $72 million and $76 million, respectively, for other unfunded commitments to extend credit; $8.5 billion and $9.8 billion, respectively, for standby letters of credit and other financial guarantees; and $357 million and $546 million, respectively, for other letters of credit. In regulatory filings with the Federal Reserve these commitments are shown gross of risk participations.
(e) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans, which resulted in a corresponding reclassification of commitments from Other guarantees and commitments to Wholesale other unfunded commitments to extend credit. Prior-period amounts have been revised to conform with the current presentation.
(f) At December 31, 2020 and 2019, collateral held by the Firm in support of securities lending indemnification agreements was $264.3 billion and $216.2 billion, respectively. Securities lending collateral primarily consists of cash, G7 government securities, and securities issued by U.S. GSEs and government agencies.
(g) At December 31, 2020 and 2019, includes guarantees to the Fixed Income Clearing Corporation under the sponsored member repo program and commitments and guarantees associated with the Firm's membership in certain clearing houses.
(h) At December 31, 2020 and 2019, primarily includes letters of credit hedged by derivative transactions and managed on a market risk basis, and unfunded commitments related to certain tax-oriented equity investments.
(i) Prior-period amounts have been revised to conform with the current presentation.
(j) For lending-related products, the carrying value represents the allowance for lending-related commitments and the guarantee liability; for derivative-related products, and lending-related commitments for which the fair value option was elected, the carrying value represents the fair value.

Other unfunded commitments to extend credit

Other unfunded commitments to extend credit generally consist of commitments for working capital and general corporate purposes, extensions of credit to support commercial paper facilities and bond financings in the event that those obligations cannot be remarketed to new investors, as well as committed liquidity facilities to clearing organizations. The Firm also issues commitments under multipurpose facilities which could be drawn upon in several forms, including the issuance of a standby letter of credit.

Guarantees

U.S. GAAP requires that a guarantor recognize, at the inception of a guarantee, a liability in an amount equal to the fair value of the obligation undertaken in issuing the guarantee. U.S. GAAP defines a guarantee as a contract that contingently requires the guarantor to pay a guaranteed party based upon: (a) changes in an underlying asset, liability or equity security of the guaranteed party; or (b) a third party's failure to perform under a specified agreement. The Firm considers the following off–balance sheet arrangements to be guarantees under U.S. GAAP: standby letters of credit and other financial guarantees, securities lending indemnifications, certain indemnification agreements included within third-party contractual arrangements, certain derivative contracts and the guarantees under the sponsored member repo program.

As required by U.S. GAAP, the Firm initially records guarantees at the inception date fair value of the non-contingent obligation assumed (e.g., the amount of consideration received or the net present value of the premium receivable). For these obligations, the Firm records this fair value amount in other liabilities with an offsetting entry recorded in cash (for premiums received), or other assets (for premiums receivable). Any premium receivable recorded in other assets is reduced as cash is received under the contract, and the fair value of the liability recorded at inception is amortized into income as lending and deposit-related fees over the life of the guarantee contract. The lending-related contingent obligation is recognized based on expected credit losses in addition to, and separate from, any non-contingent obligation.

Non-lending-related contingent obligations are recognized when the liability becomes probable and reasonably estimable. These obligations are not recognized if the estimated amount is less than the carrying amount of any non-contingent liability recognized at inception (adjusted for any amortization). Examples of non-lending-related contingent obligations include indemnifications provided in sales agreements, where a portion of the sale proceeds is allocated to the guarantee, which adjusts the gain or loss that would otherwise result from the transaction. For these indemnifications, the initial liability is amortized to income as the Firm's risk is reduced (i.e., over time or when the indemnification expires).

The contractual amount and carrying value of guarantees and indemnifications are included in the table on page 284.

For additional information on the guarantees, see below.

Standby letters of credit and other financial guarantees

Standby letters of credit and other financial guarantees are conditional lending commitments issued by the Firm to guarantee the performance of a client or customer to a third party under certain arrangements, such as commercial paper facilities, bond financings, acquisition financings, trade and similar transactions.

The following table summarizes the contractual amount and carrying value of standby letters of credit and other financial guarantees and other letters of credit arrangements as of December 31, 2020 and 2019.

Standby letters of credit, other financial guarantees and other letters of credit

	2020		2019	
December 31, (in millions)	Standby letters of credit and other financial guarantees	Other letters of credit	Standby letters of credit and other financial guarantees	Other letters of credit
Investment-grade[(a)]	**$ 22,850**	**$ 2,263**	$ 26,880	$ 2,137
Noninvestment-grade[(a)]	**8,132**	**790**	7,362	824
Total contractual amount	**$ 30,982**	**$ 3,053**	$ 34,242	$ 2,961
Allowance for lending-related commitments	**$ 80**	**$ 14**	$ 216	$ 4
Guarantee liability	**363**	**—**	402	—
Total carrying value	**$ 443**	**$ 14**	$ 618	$ 4
Commitments with collateral	**$ 17,238**	**$ 498**	$ 17,853	$ 728

(a) The ratings scale is based on the Firm's internal risk ratings. Refer to Note 12 for further information on internal risk ratings.

Securities lending indemnifications
Through the Firm's securities lending program, counterparties' securities, via custodial and non-custodial arrangements, may be lent to third parties. As part of this program, the Firm provides an indemnification in the lending agreements which protects the lender against the failure of the borrower to return the lent securities. To minimize its liability under these indemnification agreements, the Firm obtains cash or other highly liquid collateral with a market value exceeding 100% of the value of the securities on loan from the borrower. Collateral is marked to market daily to help assure that collateralization is adequate. Additional collateral is called from the borrower if a shortfall exists, or collateral may be released to the borrower in the event of overcollateralization. If a borrower defaults, the Firm would use the collateral held to purchase replacement securities in the market or to credit the lending client or counterparty with the cash equivalent thereof.

The cash collateral held by the Firm may be invested on behalf of the client in indemnified resale agreements, whereby the Firm indemnifies the client against the loss of principal invested. To minimize its liability under these agreements, the Firm obtains collateral with a market value exceeding 100% of the principal invested.

Derivatives qualifying as guarantees
The Firm transacts in certain derivative contracts that have the characteristics of a guarantee under U.S. GAAP. These contracts include written put options that require the Firm to purchase assets upon exercise by the option holder at a specified price by a specified date in the future. The Firm may enter into written put option contracts in order to meet client needs, or for other trading purposes. The terms of written put options are typically five years or less.

Derivatives deemed to be guarantees also includes stable value contracts, commonly referred to as "stable value products", that require the Firm to make a payment of the difference between the market value and the book value of a counterparty's reference portfolio of assets in the event that market value is less than book value and certain other conditions have been met. Stable value products are transacted in order to allow investors to realize investment returns with less volatility than an unprotected portfolio. These contracts are typically longer-term or may have no stated maturity, but allow the Firm to elect to terminate the contract under certain conditions.

The notional value of derivatives guarantees generally represents the Firm's maximum exposure. However, exposure to certain stable value products is contractually limited to a substantially lower percentage of the notional amount.

The fair value of derivative guarantees reflects the probability, in the Firm's view, of whether the Firm will be required to perform under the contract. The Firm reduces exposures to these contracts by entering into offsetting transactions, or by entering into contracts that hedge the market risk related to the derivative guarantees.

The following table summarizes the derivatives qualifying as guarantees as of December 31, 2020 and 2019.

(in millions)	December 31, 2020	December 31, 2019
Notional amounts		
Derivative guarantees	**$ 54,415**	$ 53,089
Stable value contracts with contractually limited exposure	**27,752**	28,877
Maximum exposure of stable value contracts with contractually limited exposure	**2,803**	2,967
Fair value		
Derivative payables	**322**	159

In addition to derivative contracts that meet the characteristics of a guarantee, the Firm is both a purchaser and seller of credit protection in the credit derivatives market. Refer to Note 5 for a further discussion of credit derivatives.

Unsettled securities financing agreements
In the normal course of business, the Firm enters into resale and securities borrowed agreements. At settlement, these commitments result in the Firm advancing cash to and receiving securities collateral from the counterparty. The Firm also enters into repurchase and securities loaned agreements. At settlement, these commitments result in the Firm receiving cash from and providing securities collateral to the counterparty. Such agreements settle at a future date. These agreements generally do not meet the definition of a derivative, and therefore, are not recorded on the Consolidated balance sheets until settlement date. These agreements predominantly have regular-way settlement terms. Refer to Note 11 for a further discussion of securities financing agreements.

Loan sales- and securitization-related indemnifications
Mortgage repurchase liability
In connection with the Firm's mortgage loan sale and securitization activities with U.S. GSEs the Firm has made representations and warranties that the loans sold meet certain requirements, and that may require the Firm to repurchase mortgage loans and/or indemnify the loan purchaser if such representations and warranties are breached by the Firm.

Private label securitizations
The liability related to repurchase demands associated with private label securitizations is separately evaluated by the Firm in establishing its litigation reserves.

Refer to Note 30 for additional information regarding litigation.

Loans sold with recourse
The Firm provides servicing for mortgages and certain commercial lending products on both a recourse and nonrecourse basis. In nonrecourse servicing, the principal credit risk to the Firm is the cost of temporary servicing advances of funds (i.e., normal servicing advances). In recourse servicing, the servicer agrees to share credit risk

with the owner of the mortgage loans, such as Fannie Mae or Freddie Mac or a private investor, insurer or guarantor. Losses on recourse servicing predominantly occur when foreclosure sales proceeds of the property underlying a defaulted loan are less than the sum of the outstanding principal balance, plus accrued interest on the loan and the cost of holding and disposing of the underlying property. The Firm's securitizations are predominantly nonrecourse, thereby effectively transferring the risk of future credit losses to the purchaser of the mortgage-backed securities issued by the trust. At December 31, 2020 and 2019, the unpaid principal balance of loans sold with recourse totaled $889 million and $944 million, respectively. The carrying value of the related liability that the Firm has recorded in accounts payable and other liabilities on the Consolidated balance sheets, which is representative of the Firm's view of the likelihood it will have to perform under its recourse obligations, was $23 million and $27 million at December 31, 2020 and 2019, respectively.

Other off-balance sheet arrangements

Indemnification agreements – general

In connection with issuing securities to investors outside the U.S., the Firm may agree to pay additional amounts to the holders of the securities in the event that, due to a change in tax law, certain types of withholding taxes are imposed on payments on the securities. The terms of the securities may also give the Firm the right to redeem the securities if such additional amounts are payable. The Firm may also enter into indemnification clauses in connection with the licensing of software to clients ("software licensees") or when it sells a business or assets to a third party ("third-party purchasers"), pursuant to which it indemnifies software licensees for claims of liability or damages that may occur subsequent to the licensing of the software, or third-party purchasers for losses they may incur due to actions taken by the Firm prior to the sale of the business or assets. It is difficult to estimate the Firm's maximum exposure under these indemnification arrangements, since this would require an assessment of future changes in tax law and future claims that may be made against the Firm that have not yet occurred. However, based on historical experience, management expects the risk of loss to be remote.

Merchant charge-backs

Under the rules of payment networks, the Firm, in its role as a merchant acquirer, retains a contingent liability for disputed processed credit and debit card transactions that result in a charge-back to the merchant. If a dispute is resolved in the cardholder's favor, Merchant Services will (through the cardholder's issuing bank) credit or refund the amount to the cardholder and will charge back the transaction to the merchant. If Merchant Services is unable to collect the amount from the merchant, Merchant Services will bear the loss for the amount credited or refunded to the cardholder. Merchant Services mitigates this risk by withholding future settlements, retaining cash reserve accounts or obtaining other collateral. In addition, Merchant Services recognizes a valuation allowance that covers the payment or performance risk to the Firm related to charge-backs. The carrying value of the valuation allowance was $12 million and $11 million at December 31, 2020 and 2019, respectively.

For the years ended December 31, 2020, 2019 and 2018, Merchant Services processed an aggregate volume of $1,597.3 billion, $1,511.5 billion, and $1,366.1 billion, respectively.

Clearing Services – Client Credit Risk

The Firm provides clearing services for clients by entering into securities purchases and sales and derivative contracts with CCPs, including ETDs such as futures and options, as well as OTC-cleared derivative contracts. As a clearing member, the Firm stands behind the performance of its clients, collects cash and securities collateral (margin) as well as any settlement amounts due from or to clients, and remits them to the relevant CCP or client in whole or part. There are two types of margin: variation margin is posted on a daily basis based on the value of clients' derivative contracts and initial margin is posted at inception of a derivative contract, generally on the basis of the potential changes in the variation margin requirement for the contract.

As a clearing member, the Firm is exposed to the risk of nonperformance by its clients, but is not liable to clients for the performance of the CCPs. Where possible, the Firm seeks to mitigate its risk to the client through the collection of appropriate amounts of margin at inception and throughout the life of the transactions. The Firm can also cease providing clearing services if clients do not adhere to their obligations under the clearing agreement. In the event of nonperformance by a client, the Firm would close out the client's positions and access available margin. The CCP would utilize any margin it holds to make itself whole, with any remaining shortfalls required to be paid by the Firm as a clearing member.

The Firm reflects its exposure to nonperformance risk of the client through the recognition of margin receivables from clients and margin payables to CCPs; the clients' underlying securities or derivative contracts are not reflected in the Firm's Consolidated Financial Statements.

It is difficult to estimate the Firm's maximum possible exposure through its role as a clearing member, as this would require an assessment of transactions that clients may execute in the future. However, based upon historical experience, and the credit risk mitigants available to the Firm, management believes it is unlikely that the Firm will have to make any material payments under these arrangements and the risk of loss is expected to be remote.

Refer to Note 5 for information on the derivatives that the Firm executes for its own account and records in its Consolidated Financial Statements.

Exchange & Clearing House Memberships
The Firm is a member of several securities and derivative exchanges and clearing houses, both in the U.S. and other countries, and it provides clearing services to its clients. Membership in some of these organizations requires the Firm to pay a pro rata share of the losses incurred by the organization as a result of the default of another member. Such obligations vary with different organizations. These obligations may be limited to the amount (or a multiple of the amount) of the Firm's contribution to the guarantee fund maintained by a clearing house or exchange as part of the resources available to cover any losses in the event of a member default. Alternatively, these obligations may also include a pro rata share of the residual losses after applying the guarantee fund. Additionally, certain clearing houses require the Firm as a member to pay a pro rata share of losses that may result from the clearing house's investment of guarantee fund contributions and initial margin, unrelated to and independent of the default of another member. Generally a payment would only be required should such losses exceed the resources of the clearing house or exchange that are contractually required to absorb the losses in the first instance. In certain cases, it is difficult to estimate the Firm's maximum possible exposure under these membership agreements, since this would require an assessment of future claims that may be made against the Firm that have not yet occurred. However, based on historical experience, management expects the risk of loss to the Firm to be remote. Where the Firm's maximum possible exposure can be estimated, the amount is disclosed in the table on page 284, in the Exchange & clearing house guarantees and commitments line.

Sponsored member repo program
The Firm acts as a sponsoring member to clear eligible overnight resale and repurchase agreements through the Government Securities Division of the Fixed Income Clearing Corporation ("FICC") on behalf of clients that become sponsored members under the FICC's rules. The Firm also guarantees to the FICC the prompt and full payment and performance of its sponsored member clients' respective obligations under the FICC's rules. The Firm minimizes its liability under these overnight guarantees by obtaining a security interest in the cash or high-quality securities collateral that the clients place with the clearing house; therefore, the Firm expects the risk of loss to be remote. The Firm's maximum possible exposure, without taking into consideration the associated collateral, is included in the Exchange & clearing house guarantees and commitments line on page 284. Refer to Note 11 for additional information on credit risk mitigation practices on resale agreements and the types of collateral pledged under repurchase agreements.

Guarantees of subsidiaries
In the normal course of business, the Parent Company may provide counterparties with guarantees of certain of the trading and other obligations of its subsidiaries on a contract-by-contract basis, as negotiated with the Firm's counterparties. The obligations of the subsidiaries are included on the Firm's Consolidated balance sheets or are reflected as off-balance sheet commitments; therefore, the Parent Company has not recognized a separate liability for these guarantees. The Firm believes that the occurrence of any event that would trigger payments by the Parent Company under these guarantees is remote.

The Parent Company has guaranteed certain long-term debt and structured notes of its subsidiaries, including JPMorgan Chase Financial Company LLC ("JPMFC"), a 100%-owned and consolidated finance subsidiary. All securities issued by JPMFC are fully and unconditionally guaranteed by the Parent Company and no other subsidiary of the parent company guarantees these securities. These guarantees, which rank on a parity with the Firm's unsecured and unsubordinated indebtedness, are not included in the table on page 284 of this Note. Refer to Note 20 for additional information.

Note 29 – Pledged assets and collateral

Pledged assets

The Firm pledges financial assets that it owns to maintain potential borrowing capacity at discount windows with Federal Reserve banks, various other central banks and FHLBs. Additionally, the Firm pledges assets for other purposes, including to collateralize repurchase and other securities financing agreements, to cover short sales and to collateralize derivative contracts and deposits. Certain of these pledged assets may be sold or repledged or otherwise used by the secured parties and are parenthetically identified on the Consolidated balance sheets as assets pledged.

The following table presents the Firm's pledged assets.

December 31, (in billions)	2020	2019
Assets that may be sold or repledged or otherwise used by secured parties	**$ 166.6**	$ 125.2
Assets that may not be sold or repledged or otherwise used by secured parties	**113.9**	80.2
Assets pledged at Federal Reserve banks and FHLBs	**455.3**	478.9
Total pledged assets	**$ 735.8**	$ 684.3

Total pledged assets do not include assets of consolidated VIEs; these assets are used to settle the liabilities of those entities. Refer to Note 14 for additional information on assets and liabilities of consolidated VIEs. Refer to Note 11 for additional information on the Firm's securities financing activities. Refer to Note 20 for additional information on the Firm's long-term debt. The significant components of the Firm's pledged assets were as follows.

December 31, (in billions)	2020	2019
Investment securities	**$ 80.2**	$ 35.9
Loans	**420.5**	460.4
Trading assets and other	**235.1**	188.0
Total pledged assets	**$ 735.8**	$ 684.3

Collateral

The Firm accepts financial assets as collateral that it is permitted to sell or repledge, deliver or otherwise use. This collateral is generally obtained under resale and other securities financing agreements, prime brokerage-related held-for-investment customer receivables and derivative contracts. Collateral is generally used under repurchase and other securities financing agreements, to cover short sales, and to collateralize derivative contracts and deposits.

The following table presents the fair value of collateral accepted.

December 31, (in billions)	2020	2019
Collateral permitted to be sold or repledged, delivered, or otherwise used	**$ 1,451.7**	$ 1,282.5
Collateral sold, repledged, delivered or otherwise used	**1,038.9**	1,000.5 [(a)]

(a) Includes collateral repledged to the Federal Reserve under the Federal Reserve's open market operations.

Note 30 – Litigation

Contingencies

As of December 31, 2020, the Firm and its subsidiaries and affiliates are defendants, putative defendants or respondents in numerous legal proceedings, including private, civil litigations and regulatory/government investigations. The litigations range from individual actions involving a single plaintiff to class action lawsuits with potentially millions of class members. Investigations involve both formal and informal proceedings, by both governmental agencies and self-regulatory organizations. These legal proceedings are at varying stages of adjudication, arbitration or investigation, and involve each of the Firm's lines of business and several geographies and a wide variety of claims (including common law tort and contract claims and statutory antitrust, securities and consumer protection claims), some of which present novel legal theories.

The Firm believes the estimate of the aggregate range of reasonably possible losses, in excess of reserves established, for its legal proceedings is from $0 to approximately $1.5 billion at December 31, 2020. This estimated aggregate range of reasonably possible losses was based upon information available as of that date for those proceedings in which the Firm believes that an estimate of reasonably possible loss can be made. For certain matters, the Firm does not believe that such an estimate can be made, as of that date. The Firm's estimate of the aggregate range of reasonably possible losses involves significant judgment, given:

- the number, variety and varying stages of the proceedings, including the fact that many are in preliminary stages,
- the existence in many such proceedings of multiple defendants, including the Firm, whose share of liability (if any) has yet to be determined,
- the numerous yet-unresolved issues in many of the proceedings, including issues regarding class certification and the scope of many of the claims, and
- the attendant uncertainty of the various potential outcomes of such proceedings, including where the Firm has made assumptions concerning future rulings by the court or other adjudicator, or about the behavior or incentives of adverse parties or regulatory authorities, and those assumptions prove to be incorrect.

In addition, the outcome of a particular proceeding may be a result which the Firm did not take into account in its estimate because the Firm had deemed the likelihood of that outcome to be remote. Accordingly, the Firm's estimate of the aggregate range of reasonably possible losses will change from time to time, and actual losses may vary significantly.

Set forth below are descriptions of the Firm's material legal proceedings.

Advisory and Other Activities. In November 2020, JPMorgan Chase Bank, N.A. entered into a resolution with the Office of the Comptroller of the Currency ("OCC") regarding historical deficiencies in internal controls and internal audit for certain fiduciary activities. In connection with the resolution, JPMorgan Chase Bank, N.A. paid a $250 million Civil Money Penalty. The OCC found that JPMorgan Chase Bank, N.A. has remediated the deficiencies that led to the penalty.

Amrapali. India's Enforcement Directorate ("ED") is investigating JPMorgan India Private Limited in connection with investments made in 2010 and 2012 by two offshore funds formerly managed by JPMorgan Chase entities into residential housing projects developed by the Amrapali Group ("Amrapali"). In 2017, numerous creditors filed civil claims against Amrapali including petitions brought by home buyers relating to delays in delivering or failure to deliver residential units. The home buyers' petitions have been overseen by the Supreme Court of India since 2017 pursuant to its jurisdiction over public interest litigation. In July 2019, the Supreme Court of India issued an order making preliminary findings that Amrapali and other parties, including unspecified JPMorgan Chase entities and the offshore funds that had invested in the projects, violated certain currency control and money laundering provisions, and ordering the ED to conduct a further inquiry under India's Prevention of Money Laundering Act ("PMLA") and Foreign Exchange Management Act ("FEMA"). In May 2020, the Enforcement Directorate issued a provisional attachment order as part of the criminal PMLA proceedings freezing approximately $25 million held by JPMorgan India Private Limited. In June 2020, the funds were transferred to an account held by the Supreme Court of India. A separate civil proceeding relating to alleged FEMA violations is ongoing. The Firm is responding to and cooperating with the investigation.

Federal Republic of Nigeria Litigation. JPMorgan Chase Bank, N.A. operated an escrow and depository account for the Federal Government of Nigeria ("FGN") and two major international oil companies. The account held approximately $1.1 billion in connection with a dispute among the clients over rights to an oil field. Following the settlement of the dispute, JPMorgan Chase Bank, N.A. paid out the monies in the account in 2011 and 2013 in accordance with directions received from its clients. In November 2017, the Federal Republic of Nigeria ("FRN") commenced a claim in the English High Court for approximately $875 million in payments made out of the accounts. The FRN, claiming to be the same entity as the FGN, alleges that the payments were instructed as part of a complex fraud not involving JPMorgan Chase Bank, N.A., but that JPMorgan Chase Bank, N.A. was or should have been on notice that the payments may be fraudulent. JPMorgan Chase Bank, N.A. applied for summary judgment and was unsuccessful. The claim is ongoing and a trial has been scheduled to commence in February 2022.

Foreign Exchange Investigations and Litigation. The Firm previously reported settlements with certain government authorities relating to its foreign exchange ("FX") sales and trading activities and controls related to those activities. Among those resolutions, in May 2015, the Firm pleaded guilty to a single violation of federal antitrust law. In January 2017, the Firm was sentenced, with judgment entered thereafter and a term of probation ending in January 2020. The term of probation has concluded, with the Firm remaining in good standing throughout the probation period. The Department of Labor granted the Firm a five-year exemption of disqualification that allows the Firm and its affiliates to continue to rely on the Qualified Professional Asset Manager exemption under the Employee Retirement Income Security Act ("ERISA") until January 2023. The Firm will need to reapply in due course for a further exemption to cover the remainder of the ten-year disqualification period. A South Africa Competition Commission matter is the remaining FX-related governmental inquiry, and is currently pending before the South Africa Competition Tribunal.

In August 2018, the United States District Court for the Southern District of New York granted final approval to the Firm's settlement of a consolidated class action brought by U.S.-based plaintiffs, which principally alleged violations of federal antitrust laws based on an alleged conspiracy to manipulate foreign exchange rates and also sought damages on behalf of persons who transacted in FX futures and options on futures. Certain members of the settlement class filed requests to the Court to be excluded from the class, and certain of them filed a complaint against the Firm and a number of other foreign exchange dealers in November 2018. A number of these actions remain pending. Further, putative class actions have been filed against the Firm and a number of other foreign exchange dealers on behalf of certain consumers who purchased foreign currencies at allegedly inflated rates and purported indirect purchasers of FX instruments; these actions also remain pending in the District Court. In 2020, the Court approved a settlement by the Firm and 11 other defendants of a class action filed by purported indirect purchasers for a total of $10 million. In addition, some FX-related individual and putative class actions based on similar alleged underlying conduct have been filed outside the U.S., including in the U.K., Israel and Australia.

Interchange Litigation. Groups of merchants and retail associations filed a series of class action complaints alleging that Visa and Mastercard, as well as certain banks, conspired to set the price of credit and debit card interchange fees and enacted related rules in violation of antitrust laws. In 2012, the parties initially settled the cases for a cash payment, a temporary reduction of credit card interchange, and modifications to certain credit card network rules. In 2017, after the approval of that settlement was reversed on appeal, the case was remanded to the United States District Court for the Eastern District of New York for further proceedings consistent with the appellate decision.

The original class action was divided into two separate actions, one seeking primarily monetary relief and the other seeking primarily injunctive relief. In September 2018, the parties to the class action seeking monetary relief finalized an agreement which amends and supersedes the prior settlement agreement. Pursuant to this settlement, the defendants collectively contributed an additional $900 million to the approximately $5.3 billion previously held in escrow from the original settlement. In December 2019, the amended agreement was approved by the District Court. Certain merchants appealed the District Court's approval order, and those appeals are pending. Based on the percentage of merchants that opted out of the amended class settlement, $700 million has been returned to the defendants from the settlement escrow in accordance with the settlement agreement. The class action seeking primarily injunctive relief continues separately.

In addition, certain merchants have filed individual actions raising similar allegations against Visa and Mastercard, as well as against the Firm and other banks, and some of those actions remain pending.

LIBOR and Other Benchmark Rate Investigations and Litigation. JPMorgan Chase has responded to inquiries from various governmental agencies and entities around the world relating primarily to the British Bankers Association's London Interbank Offered Rate ("LIBOR") for various currencies and the European Banking Federation's Euro Interbank Offered Rate ("EURIBOR"). The Swiss Competition Commission's investigation relating to EURIBOR, to which the Firm and other banks are subject, continues. In December 2016, the European Commission issued a decision against the Firm and other banks finding an infringement of European antitrust rules relating to EURIBOR. The Firm has filed an appeal of that decision with the European General Court, and that appeal is pending.

In addition, the Firm has been named as a defendant along with other banks in a series of individual and putative class actions related to benchmarks, including U.S. dollar LIBOR during the period that it was administered by the BBA and, in a separate consolidated putative class action, during the period that it was administered by ICE Benchmark Administration. These actions have been filed, or consolidated for pre-trial purposes, in the United States District Court for the Southern District of New York. In these actions, plaintiffs make varying allegations that in various periods, starting in 2000 or later, defendants either individually or collectively manipulated various benchmark rates by submitting rates that were artificially low or high. Plaintiffs allege that they transacted in loans, derivatives or other financial instruments whose values are affected by changes in these rates and assert a variety of claims including antitrust claims seeking treble damages.

In actions related to U.S. dollar LIBOR during the period that it was administered by the BBA, the Firm has resolved certain of these actions, and others are in various stages of litigation. The District Court dismissed certain claims, including antitrust claims brought by some plaintiffs whom the District Court found did not have standing to assert such claims, and permitted certain claims to proceed, including antitrust, Commodity Exchange Act, Section 10(b) of the Securities Exchange Act and common law claims. The plaintiffs whose antitrust claims were dismissed for lack of standing have filed an appeal. The District Court granted class certification of antitrust claims related to bonds and interest rate swaps sold directly by the defendants and denied class certification motions filed by other plaintiffs. In the consolidated putative class action related to the time period that U.S. dollar LIBOR was administered by ICE Benchmark Administration, the District Court granted defendants' motion to dismiss plaintiffs' complaint, and the plaintiffs have appealed. The Firm's settlements of putative class actions related to Swiss franc LIBOR, the Singapore Interbank Offered Rate and the Singapore Swap Offer Rate ("SIBOR"), and the Australian Bank Bill Swap Reference Rate, and one of the putative class actions related to U.S. dollar LIBOR remain subject to court approval. In the class actions related to SIBOR and Swiss franc LIBOR, the District Court concluded that the Court lacked subject matter jurisdiction, and plaintiffs' appeals of those decisions are pending.

In addition to the actions pending or consolidated in the Southern District of New York, in August 2020, a group of individual plaintiffs filed a lawsuit asserting antitrust claims in the United States District Court for the Northern District of California, alleging that the Firm and other defendants were engaged in an unlawful agreement to set LIBOR and conspired to monopolize the market for LIBOR-based consumer loans and credit cards. The complaint seeks injunctive relief and monetary damages.

Metals and U.S. Treasuries Investigations and Litigation and Related Inquiries. The Firm previously reported that it and/or certain of its subsidiaries had entered into resolutions with the U.S. Department of Justice ("DOJ"), the U.S. Commodity Futures Trading Commission ("CFTC") and the U.S. Securities and Exchange Commission ("SEC"), which, collectively, resolved those agencies' respective investigations relating to historical trading practices by former employees in the precious metals and U.S. treasuries markets and related conduct from 2008 to 2016.

The Firm entered into a Deferred Prosecution Agreement ("DPA") with the DOJ in which it agreed to the filing of a criminal information charging JPMorgan Chase & Co. with two counts of wire fraud and agreed, along with JPMorgan Chase Bank, N.A. and J.P. Morgan Securities LLC, to certain terms and obligations as set forth therein. Under the terms of the DPA, the criminal information will be dismissed after three years, provided that JPMorgan Chase & Co., JPMorgan Chase Bank, N.A. and J.P. Morgan Securities LLC fully comply with all of their obligations.

Across the three resolutions with the DOJ, CFTC and SEC, JPMorgan Chase & Co., JPMorgan Chase Bank, N.A. and J.P. Morgan Securities LLC agreed to pay a total monetary amount of approximately $920 million. A portion of the total monetary amount includes victim compensation payments.

Several putative class action complaints have been filed in the United States District Court for the Southern District of New York against the Firm and certain former employees, alleging a precious metals futures and options price manipulation scheme in violation of the Commodity Exchange Act. Some of the complaints also allege unjust enrichment and deceptive acts or practices under the General Business Law of the State of New York. The Court consolidated these putative class actions in February 2019, and the consolidated action is stayed through May 2021. In addition, several putative class actions have been filed in the United States District Courts for the Northern District of Illinois and Southern District of New York against the Firm, alleging manipulation of U.S. Treasury futures and options, and bringing claims under the Commodity Exchange Act. Some of the complaints also allege unjust enrichment. The actions in the Northern District of Illinois have been transferred to the Southern District of New York. The Court consolidated these putative class actions in October 2020 and set a deadline of February 2021 for the filing of a consolidated complaint. Two putative class action complaints have also been filed under the Securities Exchange Act of 1934 in the United States District Court for the Eastern District of New York against the Firm and certain individual defendants on behalf of shareholders who acquired shares during the putative class period alleging that certain SEC filings of the Firm were materially false or misleading in that they did not disclose certain information relating to the above-referenced investigations. Plaintiffs have filed a stipulation seeking consolidation of the actions and the appointment of co-lead plaintiffs and counsel, which is pending Court approval.

Wendel. Since 2012, the French criminal authorities have been investigating a series of transactions entered into by senior managers of Wendel Investissement ("Wendel") during the period from 2004 through 2007 to restructure their shareholdings in Wendel. JPMorgan Chase Bank, N.A., Paris branch provided financing for the transactions to a number of managers of Wendel in 2007. JPMorgan Chase has cooperated with the investigation. The investigating judges issued an *ordonnance de renvoi* in November 2016, referring JPMorgan Chase Bank, N.A. to the French *tribunal correctionnel* for alleged complicity in tax fraud. In January 2018, the Paris Court of Appeal issued a decision cancelling the *mise en examen* of JPMorgan Chase Bank, N.A. The Court of Cassation, France's highest court, ruled in September 2018 that a *mise en examen* is a prerequisite for an *ordonnance de renvoi* and in January 2020 ordered the annulment of the *ordonnance de renvoi* referring JPMorgan Chase Bank, N.A. to the French *tribunal correctionnel*. The Court of Appeal found in January 2021 that it had no power to take further action against JPMorgan Chase following the Court of Cassation's ruling. At the opening of a trial of the managers of Wendel in January 2021, the *tribunal correctionnel* directed the criminal authorities to clarify whether a further investigation should be opened against JPMorgan Chase, pending which the trial was postponed. In addition, a number of the managers have commenced civil proceedings against JPMorgan Chase Bank, N.A. The claims are separate, involve different allegations and are at various stages of proceedings.

* * *

In addition to the various legal proceedings discussed above, JPMorgan Chase and its subsidiaries are named as defendants or are otherwise involved in a substantial number of other legal proceedings. The Firm believes it has meritorious defenses to the claims asserted against it in its currently outstanding legal proceedings and it intends to defend itself vigorously. Additional legal proceedings may be initiated from time to time in the future.

The Firm has established reserves for several hundred of its currently outstanding legal proceedings. In accordance with the provisions of U.S. GAAP for contingencies, the Firm accrues for a litigation-related liability when it is probable that such a liability has been incurred and the amount of the loss can be reasonably estimated. The Firm evaluates its outstanding legal proceedings each quarter to assess its litigation reserves, and makes adjustments in such reserves, upward or downward, as appropriate, based on management's best judgment after consultation with counsel. The Firm's legal expense was $1.1 billion, $239 million and $72 million for the years ended December 31, 2020, 2019 and 2018, respectively. There is no assurance that the Firm's litigation reserves will not need to be adjusted in the future.

In view of the inherent difficulty of predicting the outcome of legal proceedings, particularly where the claimants seek very large or indeterminate damages, or where the matters present novel legal theories, involve a large number of parties or are in early stages of discovery, the Firm cannot state with confidence what will be the eventual outcomes of the currently pending matters, the timing of their ultimate resolution or the eventual losses, fines, penalties or consequences related to those matters. JPMorgan Chase believes, based upon its current knowledge and after consultation with counsel, consideration of the material legal proceedings described above and after taking into account its current litigation reserves and its estimated aggregate range of possible losses, that the other legal proceedings currently pending against it should not have a material adverse effect on the Firm's consolidated financial condition. The Firm notes, however, that in light of the uncertainties involved in such proceedings, there is no assurance that the ultimate resolution of these matters will not significantly exceed the reserves it has currently accrued or that a matter will not have material reputational consequences. As a result, the outcome of a particular matter may be material to JPMorgan Chase's operating results for a particular period, depending on, among other factors, the size of the loss or liability imposed and the level of JPMorgan Chase's income for that period.

Note 31 – International operations

The following table presents income statement and balance sheet-related information for JPMorgan Chase by major international geographic area. The Firm defines international activities for purposes of this footnote presentation as business transactions that involve clients residing outside of the U.S., and the information presented below is based predominantly on the domicile of the client, the location from which the client relationship is managed, booking location or the location of the trading desk. However, many of the Firm's U.S. operations serve international businesses.

As the Firm's operations are highly integrated, estimates and subjective assumptions have been made to apportion revenue and expense between U.S. and international operations. These estimates and assumptions are consistent with the allocations used for the Firm's segment reporting as set forth in Note 32.

The Firm's long-lived assets for the periods presented are not considered by management to be significant in relation to total assets. The majority of the Firm's long-lived assets are located in the U.S.

As of or for the year ended December 31, (in millions)	Revenue[c]	Expense[d]	Income before income tax expense	Net income	Total assets
2020					
Europe/Middle East/Africa	**$ 16,566**	**$ 10,987**	**$ 5,579**	**$ 3,868**	**$ 530,687** [e]
Asia-Pacific	**9,289**	**5,558**	**3,731**	**2,630**	**252,553**
Latin America/Caribbean	**2,740**	**1,590**	**1,150**	**837**	**61,980**
Total international	**28,595**	**18,135**	**10,460**	**7,335**	**845,220**
North America[a]	**90,948**	**66,001**	**24,947**	**21,796**	**2,540,851**
Total	**$ 119,543**	**$ 84,136**	**$ 35,407**	**$ 29,131**	**$ 3,386,071**
2019[b]					
Europe/Middle East/Africa	$ 15,887	$ 9,860	$ 6,027	$ 4,158	$ 391,369 [e]
Asia-Pacific	7,254	5,060	2,194	1,467	183,023
Latin America/Caribbean	2,405	1,561	844	609	47,820
Total international	25,546	16,481	9,065	6,234	622,212
North America[a]	89,853	54,373	35,480	30,197	2,065,167
Total	$ 115,399	$ 70,854	$ 44,545	$ 36,431	$ 2,687,379
2018[b]					
Europe/Middle East/Africa	$ 16,459	$ 10,032	$ 6,427	$ 4,569	$ 424,935 [e]
Asia-Pacific	6,991	4,884	2,107	1,481	171,547
Latin America/Caribbean	2,365	1,301	1,064	744	43,871
Total international	25,815	16,217	9,598	6,794	640,353
North America[a]	82,968	51,802	31,166	25,680	1,982,179
Total	$ 108,783	$ 68,019	$ 40,764	$ 32,474	$ 2,622,532

(a) Substantially reflects the U.S.
(b) Prior-period amounts have been revised to conform with the current presentation.
(c) Revenue is composed of net interest income and noninterest revenue.
(d) Expense is composed of noninterest expense and the provision for credit losses.
(e) Total assets for the U.K. were approximately $353 billion, $309 billion and $299 billion at December 31, 2020, 2019 and 2018, respectively.

Note 32 – Business segments

The Firm is managed on an LOB basis. There are four major reportable business segments – Consumer & Community Banking, Corporate & Investment Bank, Commercial Banking and Asset & Wealth Management. In addition, there is a Corporate segment.The business segments are determined based on the products and services provided, or the type of customer served, and they reflect the manner in which financial information is currently evaluated by the Firm's Operating Committee. Segment results are presented on a managed basis. Refer to Segment results of this footnote for a further discussion of JPMorgan Chase's business segments.

The following is a description of each of the Firm's business segments, and the products and services they provide to their respective client bases.

Consumer & Community Banking

Consumer & Community Banking offers services to consumers and businesses through bank branches, ATMs, digital (including mobile and online) and telephone banking. CCB is organized into Consumer & Business Banking (including Consumer Banking, J.P. Morgan Wealth Management and Business Banking), Home Lending (including Home Lending Production, Home Lending Servicing and Real Estate Portfolios) and Card & Auto. Consumer & Business Banking offers deposit and investment products, payments and services to consumers, and lending, deposit, and cash management and payment solutions to small businesses. Home Lending includes mortgage origination and servicing activities, as well as portfolios consisting of residential mortgages and home equity loans. Card & Auto issues credit cards to consumers and small businesses and originates and services auto loans and leases.

Corporate & Investment Bank

The Corporate & Investment Bank, which consists of Banking and Markets & Securities Services, offers a broad suite of investment banking, market-making, prime brokerage, and treasury and securities products and services to a global client base of corporations, investors, financial institutions, merchants, government and municipal entities. Banking offers a full range of investment banking products and services in all major capital markets, including advising on corporate strategy and structure, capital-raising in equity and debt markets, as well as loan origination and syndication. Banking also includes Wholesale Payments, which provides payments services enabling clients to manage payments and receipts globally, and cross-border financing. Markets & Securities Services includes Markets, a global market-maker across products, including cash and derivative instruments, which also offers sophisticated risk management solutions, prime brokerage, and research. Markets & Securities Services also includes Securities Services, a leading global custodian which provides custody, fund accounting and administration, and securities lending products principally for asset managers, insurance companies and public and private investment funds.

Commercial Banking

Commercial Banking provides comprehensive financial solutions, including lending, wholesale payments, investment banking and asset management products across three primary client segments: Middle Market Banking, Corporate Client Banking and Commercial Real Estate Banking. Other includes amounts not aligned with a primary client segment.

Middle Market Banking covers small and midsized companies, local governments and nonprofit clients.

Corporate Client Banking covers large corporations.

Commercial Real Estate Banking covers investors, developers, and owners of multifamily, office, retail, industrial and affordable housing properties.

Asset & Wealth Management

Asset & Wealth Management, with client assets of $3.7 trillion, is a global leader in investment and wealth management.

Asset Management
Offers multi-asset investment management solutions across equities, fixed income, alternatives and money market funds to institutional and retail investors providing for a broad range of clients' investment needs.

Wealth Management
Provides retirement products and services, brokerage, custody, trusts and estates, loans, mortgages, deposits and investment management to high net worth clients.

The majority of AWM's client assets are in actively managed portfolios.

Corporate

The Corporate segment consists of Treasury and Chief Investment Office and Other Corporate, which includes corporate staff functions and expense that is centrally managed. Treasury and CIO is predominantly responsible for measuring, monitoring, reporting and managing the Firm's liquidity, funding, capital, structural interest rate and foreign exchange risks. The major Other Corporate functions include Real Estate, Technology, Legal, Corporate Finance, Human Resources, Internal Audit, Risk Management, Compliance, Control Management, Corporate Responsibility and various Other Corporate groups.

Segment results

The following table provides a summary of the Firm's segment results as of or for the years ended December 31, 2020, 2019 and 2018, on a managed basis. The Firm's definition of managed basis starts with the reported U.S. GAAP results and includes certain reclassifications to present total net revenue for the Firm (and each of the reportable business segments) on an FTE basis. Accordingly, revenue from investments that receive tax credits and tax-exempt securities is presented in the managed results on a basis comparable to taxable investments and securities. This allows management to assess the comparability of revenue from year-to-year arising from both taxable and tax-exempt sources. The corresponding income tax impact related to tax-exempt items is recorded within income tax expense/(benefit). These adjustments have no impact on net income as reported by the Firm as a whole or by the LOBs.

Business segment capital allocation

Each business segment is allocated capital by taking into consideration a variety of factors including capital levels of similarly rated peers and applicable regulatory capital requirements. ROE is measured and internal targets for expected returns are established as key measures of a business segment's performance.

The Firm's allocation methodology incorporates Basel III Standardized RWA, Basel III Advanced RWA, the GSIB surcharge, and a simulation of capital in a severe stress environment. The assumptions and methodologies used to allocate capital are periodically assessed and as a result, the capital allocated to the LOBs may change from time to time.

Business segment changes

In the fourth quarter of 2020, the Firm transferred certain assets, liabilities, revenue, expense and headcount associated with certain wealth management clients from AWM to the J.P. Morgan Wealth Management business unit within CCB. Prior-period amounts have been revised to conform with the current presentation, including the transfer of approximately 1,650 technology and support staff during the second and third quarters of 2020. Ultra-high-net-worth and certain high-net-worth client relationships remained in AWM.

In the first quarter of 2020, the Firm began reporting a Wholesale Payments business unit within CIB following a realignment of the Firm's wholesale payments businesses. The Wholesale Payments business comprises:

- Merchant Services, which was realigned from CCB to CIB
- Treasury Services and Trade Finance in CIB. Trade Finance was previously reported in Lending in CIB.

In connection with the alignment of Wholesale Payments, the assets, liabilities and headcount associated with the Merchant Services business were realigned to CIB from CCB, and the revenue and expenses of the Merchant Services business are reported across CCB, CIB and CB based primarily on client relationships. In the fourth quarter of 2020, payment processing-only clients along with the associated revenue and expenses were realigned to CIB's Wholesale Payments business from CCB and CB. Payment processing-only clients are those that only use payment services offered by Merchant Services, and in general do not currently utilize other services offered by the Firm. Prior-period amounts have been revised to reflect this realignment and revised allocation methodology.

Segment results and reconciliation[(a)]

(Table continued on next page)

As of or for the year ended December 31, (in millions, except ratios)	Consumer & Community Banking[(b)]			Corporate & Investment Bank			Commercial Banking			Asset & Wealth Management		
	2020	2019	2018	**2020**	2019	2018	**2020**	2019	2018	**2020**	2019	2018
Noninterest revenue	**$ 17,740**	$ 17,796	$ 15,338	**$ 35,120**	$30,060	$ 27,854	**$ 3,067**	$ 2,710	$ 2,620	**$ 10,822**	$ 10,236	$ 10,052
Net interest income	**33,528**	37,337	35,933	**14,164**	9,205	9,528	**6,246**	6,554	6,716	**3,418**	3,355	3,375
Total net revenue	**51,268**	55,133	51,271	**49,284**	39,265	37,382	**9,313**	9,264	9,336	**14,240**	13,591	13,427
Provision for credit losses	**12,312**	4,954	4,754	**2,726**	277	(60)	**2,113**	296	129	**263**	59	52
Noninterest expense	**27,990**	28,276	27,168	**23,538**	22,444	21,876	**3,798**	3,735	3,627	**9,957**	9,747	9,575
Income/(loss) before income tax expense/(benefit)	**10,966**	21,903	19,349	**23,020**	16,544	15,566	**3,402**	5,233	5,580	**4,020**	3,785	3,800
Income tax expense/(benefit)	**2,749**	5,362	4,642	**5,926**	4,590	3,767	**824**	1,275	1,316	**1,028**	918	855
Net income/(loss)	**$ 8,217**	$ 16,541	$ 14,707	**$ 17,094**	$11,954	$ 11,799	**$ 2,578**	$ 3,958	$ 4,264	**$ 2,992**	$ 2,867	$ 2,945
Average equity	**$ 52,000**	$ 52,000	$ 51,000	**$ 80,000**	$80,000	$ 70,000	**$ 22,000**	$ 22,000	$ 20,000	**$ 10,500**	$ 10,500	$ 9,000
Total assets	**496,705**	541,367	560,177	**1,097,219**	914,705	909,292	**228,932**	220,514	220,229	**203,384**	173,175	161,047
Return on equity	**15 %**	31 %	28 %	**20 %**	14 %	16 %	**11 %**	17 %	20 %	**28 %**	26 %	32 %
Overhead ratio	**55**	51	53	**48**	57	59	**41**	40	39	**70**	72	71

(Table continued from previous page)

As of or for the year ended December 31, (in millions, except ratios)	Corporate			Reconciling Items[(a)]			Total[(b)]		
	2020	2019	2018	2020	2019	2018	2020	2019	2018
Noninterest revenue	$ 1,199	$ (114)	$ (263)	$ (2,968)	$ (2,534)	$ (1,877)	$ 64,980	$ 58,154	$ 53,724
Net interest income	(2,375)	1,325	135	(418)	(531)	(628)	54,563	57,245	55,059
Total net revenue	(1,176)	1,211	(128)	(3,386)	(3,065)	(2,505)	119,543	115,399	108,783
Provision for credit losses	66	(1)	(4)	–	–	–	17,480	5,585	4,871
Noninterest expense	1,373	1,067	902	–	–	–	66,656	65,269	63,148
Income/(loss) before income tax expense/(benefit)	(2,615)	145	(1,026)	(3,386)	(3,065)	(2,505)	35,407	44,545	40,764
Income tax expense/(benefit)	(865)	(966)	215	(3,386)	(3,065)	(2,505)	6,276	8,114	8,290
Net income/(loss)	$ (1,750)	$ 1,111	$ (1,241)	$ –	$ –	$ –	$ 29,131	$ 36,431	$ 32,474
Average equity	$ 72,365	$ 68,407	$ 79,222	$ –	$ –	$ –	$ 236,865	$ 232,907	$ 229,222
Total assets	1,359,831	837,618	771,787	NA	NA	NA	3,386,071	2,687,379	2,622,532
Return on equity	NM	NM	NM	NM	NM	NM	12 %	15 %	13 %
Overhead ratio	NM	NM	NM	NM	NM	NM	56	57	58

(a) Segment results on a managed basis reflect revenue on a FTE basis with the corresponding income tax impact recorded within income tax expense/(benefit). These adjustments are eliminated in reconciling items to arrive at the Firm’s reported U.S. GAAP results.

(b) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.

Note 33 – Parent Company

The following tables present Parent Company-only financial statements.

Statements of income and comprehensive income

Year ended December 31, (in millions)	2020	2019	2018
Income			
Dividends from subsidiaries and affiliates:			
Bank and bank holding company	$ 6,000	$ 26,000	$ 32,501
Non-bank[(a)]	–	–	2
Interest income from subsidiaries	63	223	216
Other income from subsidiaries:			
Bank and bank holding company	2,019	2,738	515
Non-bank	(569)	197	(444)
Other income	205	(1,731)	888
Total income	7,718	27,427	33,678
Expense			
Interest expense/(income) to subsidiaries and affiliates[(a)]	(8,830)	(5,303)	2,291
Other interest expense	14,150	13,246	4,581
Noninterest expense	2,222	1,992	1,793
Total expense	7,542	9,935	8,665
Income before income tax benefit and undistributed net income of subsidiaries	176	17,492	25,013
Income tax benefit	1,324	2,033	1,838
Equity in undistributed net income of subsidiaries	27,631	16,906	5,623
Net income	$ 29,131	$ 36,431	$ 32,474
Other comprehensive income, net	6,417	3,076	(1,476)
Comprehensive income	$ 35,548	$ 39,507	$ 30,998

Balance sheets

December 31, (in millions)	2020	2019
Assets		
Cash and due from banks	$ 54	$ 32
Deposits with banking subsidiaries	6,811	5,309
Trading assets	1,775	3,011
Advances to, and receivables from, subsidiaries:		
Bank and bank holding company	27	2,358
Non-bank	86	84
Investments (at equity) in subsidiaries and affiliates:		
Bank and bank holding company	508,602	471,207
Non-bank	1,011	1,044
Other assets	10,058	10,699
Total assets	$ 528,424	$ 493,744
Liabilities and stockholders' equity		
Borrowings from, and payables to, subsidiaries and affiliates[(a)]	$ 25,150	$ 23,410
Short-term borrowings	924	2,616
Other liabilities	9,612	9,288
Long-term debt[(b)(c)]	213,384	197,100
Total liabilities[(c)]	249,070	232,414
Total stockholders' equity	279,354	261,330
Total liabilities and stockholders' equity	$ 528,424	$ 493,744

Statements of cash flows

Year ended December 31, (in millions)	2020	2019	2018
Operating activities			
Net income	$ 29,131	$ 36,431	$ 32,474
Less: Net income of subsidiaries and affiliates[(a)]	33,631	42,906	38,125
Parent company net loss	(4,500)	(6,475)	(5,651)
Cash dividends from subsidiaries and affiliates[(a)]	6,000	26,000	32,501
Other operating adjustments	15,357	9,862	(4,400)
Net cash provided by/(used in) operating activities	16,857	29,387	22,450
Investing activities			
Net change in:			
Advances to and investments in subsidiaries and affiliates, net	(2,663)	(6) [(e)]	8,036
All other investing activities, net	24	71	63
Net cash provided by/(used in) investing activities	(2,639)	65	8,099
Financing activities			
Net change in:			
Borrowings from subsidiaries and affiliates[(a)]	1,425	2,941	(2,273)
Short-term borrowings	(20)	(56)	(678)
Proceeds from long-term borrowings	37,312	25,569	25,845
Payments of long-term borrowings	(34,194)	(21,226)	(21,956)
Proceeds from issuance of preferred stock	4,500	5,000	1,696
Redemption of preferred stock	(1,430)	(4,075)	(1,696)
Treasury stock repurchased	(6,517)	(24,001)	(19,983)
Dividends paid	(12,690)	(12,343)	(10,109)
All other financing activities, net	(1,080)	(1,290)	(1,526)
Net cash used in financing activities	(12,694)	(29,481)	(30,680)
Net decrease in cash and due from banks and deposits with banking subsidiaries	1,524	(29)	(131)
Cash and due from banks and deposits with banking subsidiaries at the beginning of the year	5,341	5,370	5,501
Cash and due from banks and deposits with banking subsidiaries at the end of the year	$ 6,865	$ 5,341	$ 5,370
Cash interest paid	$ 5,445	$ 7,957	$ 6,911
Cash income taxes paid, net[(d)]	5,366	3,910	1,782

(a) Affiliates include trusts that issued guaranteed capital debt securities ("issuer trusts").
(b) At December 31, 2020, long-term debt that contractually matures in 2021 through 2025 totaled $10.8 billion, $10.0 billion, $19.1 billion, $21.8 billion, and $13.5 billion, respectively.
(c) Refer to Notes 20 and 28 for information regarding the Parent Company's guarantees of its subsidiaries' obligations.
(d) Represents payments, net of refunds, made by the Parent Company to various taxing authorities and includes taxes paid on behalf of certain of its subsidiaries that are subsequently reimbursed. The reimbursements were $8.3 billion, $6.4 billion, and $1.2 billion for the years ended December 31, 2020, 2019, and 2018, respectively.
(e) As a result of the merger of Chase Bank USA, N.A. with and into JPMorgan Chase Bank, N.A., JPMorgan Chase Bank, N.A. distributed $13.5 billion to the Parent company as a return of capital, which the Parent company contributed to the IHC.

Selected quarterly financial data (unaudited)

As of or for the period ended (in millions, except per share, ratio, headcount data and where otherwise noted)	2020 4th quarter	2020 3rd quarter	2020 2nd quarter	2020 1st quarter	2019 4th quarter	2019 3rd quarter	2019 2nd quarter	2019 1st quarter
Selected income statement data								
Total net revenue[(a)]	$ 29,224	$ 29,147	$ 32,980	$ 28,192	$ 28,285	$ 29,291	$ 28,747	$ 29,076
Total noninterest expense[(a)]	16,048	16,875	16,942	16,791	16,293	16,372	16,256	16,348
Pre-provision profit[(b)]	13,176	12,272	16,038	11,401	11,992	12,919	12,491	12,728
Provision for credit losses	(1,889)	611	10,473	8,285	1,427	1,514	1,149	1,495
Income before income tax expense	15,065	11,661	5,565	3,116	10,565	11,405	11,342	11,233
Income tax expense	2,929	2,218	878	251	2,045	2,325	1,690	2,054
Net income	$ 12,136	$ 9,443	$ 4,687	$ 2,865	$ 8,520	$ 9,080	$ 9,652	$ 9,179
Earnings per share data								
Net income: Basic	$ 3.80	$ 2.93	$ 1.39	$ 0.79	$ 2.58	$ 2.69	$ 2.83	$ 2.65
Diluted	3.79	2.92	1.38	0.78	2.57	2.68	2.82	2.65
Average shares: Basic	3,079.7	3,077.8	3,076.3	3,095.8	3,140.7	3,198.5	3,250.6	3,298.0
Diluted	3,085.1	3,082.8	3,081.0	3,100.7	3,148.5	3,207.2	3,259.7	3,308.2
Market and per common share data								
Market capitalization	$ 387,492	$ 293,451	$ 286,658	$ 274,323	$ 429,913	$ 369,133	$ 357,479	$ 328,387
Common shares at period-end	3,049.4	3,048.2	3,047.6	3,047.0	3,084.0	3,136.5	3,197.5	3,244.0
Book value per share	81.75	79.08	76.91	75.88	75.98	75.24	73.88	71.78
TBVPS[(b)]	66.11	63.93	61.76	60.71	60.98	60.48	59.52	57.62
Cash dividends declared per share	0.90	0.90	0.90	0.90	0.90	0.90	0.80	0.80
Selected ratios and metrics								
ROE[(c)]	19 %	15 %	7 %	4 %	14 %	15 %	16 %	16 %
ROTCE[(b)(c)]	24	19	9	5	17	18	20	19
ROA[(b)]	1.42	1.14	0.58	0.40	1.22	1.30	1.41	1.39
Overhead ratio	55	58	51	60	58	56	57	56
Loans-to-deposits ratio[(d)]	47	49	52	57	64	64	65	66
Firm LCR (average)	110	114	117	114	116	115	113	111
JPMorgan Chase Bank, N.A. LCR (average)	160	157	140	117	116	112	112	109
CET1 capital ratio[(e)]	13.1	13.1	12.4	11.5	12.4	12.3	12.2	12.1
Tier 1 capital ratio[(e)]	15.0	15.0	14.3	13.3	14.1	14.1	14.0	13.8
Total capital ratio[(e)]	17.3	17.3	16.7	15.5	16.0	15.9	15.8	15.7
Tier 1 leverage ratio[(e)]	7.0	7.0	6.9	7.5	7.9	7.9	8.0	8.1
SLR[(e)]	6.9	7.0	6.8	6.0	6.3	6.3	6.4	6.4
Selected balance sheet data (period-end)								
Trading assets[(d)]	$ 503,126	$ 505,822	$ 491,716	$ 510,923	$ 369,687	$ 457,274	$ 485,567	$ 495,021
Investment Securities	589,999	531,136	558,791	471,144	398,239	394,251	307,264	267,365
Loans[(d)]	1,012,853	989,740	1,009,382	1,049,610	997,620	980,019	990,775	990,515
Total assets	3,386,071	3,246,076	3,213,616	3,139,431	2,687,379	2,764,661	2,727,379	2,737,188
Deposits	2,144,257	2,001,416	1,931,029	1,836,009	1,562,431	1,525,261	1,524,361	1,493,441
Long-term debt	281,685	279,175	317,003	299,344	291,498	296,472	288,869	290,893
Common stockholders' equity	249,291	241,050	234,403	231,199	234,337	235,985	236,222	232,844
Total stockholders' equity	279,354	271,113	264,466	261,262	261,330	264,348	263,215	259,837
Headcount	255,351	256,358	256,710	256,720	256,981	257,444	254,983	255,998
Credit quality metrics								
Allowance for loan losses and lending- related commitments	$ 30,737	$ 33,637	$ 34,301	$ 25,391	$ 14,314	$ 14,400	$ 14,295	$ 14,591
Allowance for loan losses to total retained loans	2.95 %	3.26 %	3.27 %	2.32 %	1.39 %	1.42 %	1.39 %	1.43 %
Nonperforming assets[(d)]	$ 10,906	$ 11,462	$ 9,715	$ 7,062	$ 5,054	$ 5,993	$ 5,260	$ 5,616
Net charge-offs	1,050	1,180	1,560	1,469	1,494	1,371	1,403	1,361
Net charge-off rate	0.44 %	0.49 %	0.64 %	0.62 %	0.63 %	0.58 %	0.60 %	0.58 %

Effective January 1, 2020, the Firm adopted the Financial Instruments – Credit Losses ("CECL") accounting guidance. Refer to Note 1 for further information.

(a) In the second quarter of 2020, the Firm reclassified certain spend-based credit card reward costs from marketing expense to be a reduction of card income, with no effect on net income. Prior-period amounts have been revised to conform with the current presentation.

(b) Pre-provision profit, TBVPS and ROTCE are each non-GAAP financial measures. Tangible common equity ("TCE") is also a non-GAAP financial measure. Refer to Explanation and Reconciliation of the Firm's Use of Non-GAAP Financial Measures on pages 62–64 for a further discussion of these measures.

(c) Quarterly ratios are based on annualized amounts.

(d) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.

(e) The capital metrics reflect the relief provided by the Federal Reserve Board in response to the COVID-19 pandemic, including the CECL capital transition provisions that became effective in the first quarter of 2020. The SLR reflects the temporary exclusions of U.S. Treasury securities and deposits at Federal Reserve Banks that became effective in the second quarter of 2020. Refer to Regulatory Developments Relating to the COVID-19 Pandemic on pages 52-53 and Capital Risk Management on pages 91-101 for additional information.

Distribution of assets, liabilities and stockholders' equity; interest rates and interest differentials

Consolidated average balance sheets, interest and rates

Provided below is a summary of JPMorgan Chase's consolidated average balances, interest and rates on a taxable-equivalent basis for the years 2018 through 2020. Income computed on a taxable-equivalent basis is the income reported in the Consolidated statements of income, adjusted to present interest income and rates earned on assets exempt from income taxes (i.e., federal taxes) on a basis comparable with other taxable investments. The incremental tax rate used for calculating the taxable-equivalent adjustment was approximately 24% in 2020, 2019 and 2018.

(Table continued on next page)

(Unaudited)	2020			
Year ended December 31, (Taxable-equivalent interest and rates; in millions, except rates)	Average balance	Interest[h]	Rate	
Assets				
Deposits with banks	$ 444,058	$ 749	0.17 %	
Federal funds sold and securities purchased under resale agreements	275,926	2,436	0.88	
Securities borrowed	143,472	(302)	(0.21)	(j)
Trading assets – debt instruments[a]	322,936	7,869	2.44	
Taxable securities	476,650	7,843	1.65	
Non-taxable securities[b]	33,287	1,437	4.32	
Total investment securities	509,937	9,280	1.82	(k)
Loans[a]	1,004,597	43,886 (i)	4.37	
All other interest-earning assets[a][c]	78,784	1,023	1.30	
Total interest-earning assets	2,779,710	64,941	2.34	
Allowance for loan losses	(25,775)			
Cash and due from banks	22,241			
Trading assets – equity and other instruments[a]	118,055			
Trading assets – derivative receivables	76,572			
Goodwill, MSRs and other intangible assets	51,934			
All other noninterest-earning assets[a]	180,411			
Total assets	$ 3,203,148			
Liabilities				
Interest-bearing deposits	$ 1,389,224	$ 2,357	0.17 %	
Federal funds purchased and securities loaned or sold under repurchase agreements	255,421	1,058	0.41	
Short-term borrowings[d]	38,853	372	0.96	
Trading liabilities – debt and all other interest-bearing liabilities[e][f]	205,255	195	0.10	(j)
Beneficial interests issued by consolidated VIEs	19,216	214	1.12	
Long-term debt	254,400	5,764	2.27	
Total interest-bearing liabilities	2,162,369	9,960	0.46	
Noninterest-bearing deposits	517,527			
Trading liabilities – equity and other instruments[f]	32,628			
Trading liabilities – derivative payables	61,593			
All other liabilities, including the allowance for lending-related commitments	162,267			
Total liabilities	2,936,384			
Stockholders' equity				
Preferred stock	29,899			
Common stockholders' equity	236,865			
Total stockholders' equity	266,764 (g)			
Total liabilities and stockholders' equity	$ 3,203,148			
Interest rate spread			1.88 %	
Net interest income and net yield on interest-earning assets		$ 54,981	1.98	

(a) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.
(b) Represents securities that are tax-exempt for U.S. federal income tax purposes.
(c) Includes brokerage-related held-for-investment customer receivables, which are classified in accrued interest and accounts receivable, and all other interest-earning assets, which are classified in other assets on the Consolidated Balance Sheets.
(d) Includes commercial paper.
(e) All other interest-bearing liabilities include brokerage-related customer payables.

Within the Consolidated average balance sheets, interest and rates summary, the principal amounts of nonaccrual loans have been included in the average loan balances used to determine the average interest rate earned on loans. Refer to Note 12 for additional information on nonaccrual loans, including interest accrued.

(Table continued from previous page)

2019			2018		
Average balance	Interest[h]	Rate	Average balance	Interest[h]	Rate
$ 280,004	$ 3,887	1.39 %	$ 405,514	$ 5,907	1.46 %
275,429	6,146	2.23	217,150	3,819	1.76
131,291	1,574	1.20	115,082	913	0.79
294,958	9,189	3.12	208,266	7,206	3.46
284,127	7,962	2.80	194,232	5,653	2.91
35,748	1,655	4.63	42,456	1,987	4.68
319,875	9,617	3.01 [k]	236,688	7,640	3.23 [k]
989,943	52,012 [i]	5.25	977,406	49,208 [i]	5.03
53,779	2,146	3.99	52,551	2,035	3.87
2,345,279	84,571	3.61	2,212,657	76,728	3.47
(13,331)			(13,269)		
20,645			21,694		
114,323			118,152		
53,786			60,734		
53,683			54,669		
167,456			154,261		
$ 2,741,841			$ 2,608,898		
$ 1,115,848	$ 8,957	0.80 %	$ 1,045,037	$ 5,973	0.57 %
227,994	4,630	2.03	189,282	3,066	1.62
52,426	1,248	2.38	54,993	1,144	2.08
182,105	2,585	1.42	177,788	2,387	1.34
22,501	568	2.52	21,079	493	2.34
247,968	8,807	3.55	243,246	7,978	3.28
1,848,842	26,795	1.45	1,731,425	21,041	1.22
407,219			411,424		
31,085			34,667		
42,560			43,075		
151,717			132,836		
2,481,423			2,353,427		
27,511			26,249		
232,907			229,222		
260,418 [g]			255,471 [g]		
$ 2,741,841			$ 2,608,898		
		2.16 %			2.25 %
	$ 57,776	2.46		$ 55,687	2.52

(f) The combined balance of trading liabilities – debt and equity instruments was $106.5 billion, $101.0 billion and $107.0 billion for the years ended December 31, 2020, 2019 and 2018, respectively.

(g) The ratio of average stockholders' equity to average assets was 8.3%, 9.5% and 9.8% for the years ended December 31, 2020, 2019 and 2018, respectively. The return on average stockholders' equity, based on net income, was 10.9%, 14.0% and 12.7% for the years ended December 31, 2020, 2019 and 2018, respectively.

(h) Interest includes the effect of related hedging derivatives. Taxable-equivalent amounts are used where applicable.

(i) Fees and commissions on loans included in loan interest amounted to $1.0 billion for the year ended December 31, 2020, and $1.2 billion each for the years ended December 31, 2019 and 2018.

(j) Negative interest income and yield are related to the impact of current interest rates combined with the fees paid on client-driven securities borrowed balances. The negative interest expense related to prime brokerage customer payables is recognized in interest expense and reported within trading liabilities - debt and all other interest-bearing liabilities.

(k) The annualized rate for securities based on amortized cost was 1.85%, 3.05% and 3.25% for the years ended December 31, 2020, 2019 and 2018, respectively, and does not give effect to changes in fair value that are reflected in AOCI.

Interest rates and interest differential analysis of net interest income – U.S. and non-U.S.

Presented below is a summary of interest and rates segregated between U.S. and non-U.S. operations for the years 2018 through 2020. The segregation of U.S. and non-U.S. components is based on the location of the office recording the transaction. Intercompany funding generally consists of dollar-denominated deposits originated in various locations that are centrally managed by Treasury and CIO.

(Table continued on next page)

(Unaudited) Year ended December 31, (Taxable-equivalent interest and rates; in millions, except rates)	2020 Average balance	 Interest	 Rate
Interest-earning assets			
Deposits with banks:			
U.S.	$ 294,669	$ 768	0.26 %
Non-U.S.	149,389	(19)	(0.01)
Federal funds sold and securities purchased under resale agreements:			
U.S.	141,409	1,341	0.95
Non-U.S.	134,517	1,095	0.81
Securities borrowed:[(a)]			
U.S.	100,026	(305)	(0.30)
Non-U.S.	43,446	3	0.01
Trading assets – debt instruments: [(b)]			
U.S.	216,025	5,056	2.34
Non-U.S.	106,911	2,813	2.63
Investment securities:			
U.S.	475,832	8,703	1.83
Non-U.S.	34,105	577	1.69
Loans:[(b)]			
U.S.	909,850	41,708	4.58
Non-U.S.	94,747	2,178	2.30
All other interest-earning assets, predominantly U.S.[(b)]	78,784	1,023	1.30
Total interest-earning assets	2,779,710	64,941	2.34
Interest-bearing liabilities			
Interest-bearing deposits:			
U.S.	1,068,857	2,288	0.21
Non-U.S.	320,367	69	0.02
Federal funds purchased and securities loaned or sold under repurchase agreements:			
U.S.	204,958	863	0.42
Non-U.S.	50,463	195	0.39
Trading liabilities – debt, short-term and all other interest-bearing liabilities:[(a)(c)]			
U.S.	151,120	(30)	(0.02)
Non-U.S.	92,988	597	0.64
Beneficial interests issued by consolidated VIEs, predominantly U.S.	19,216	214	1.12
Long-term debt:			
U.S.	247,623	5,704	2.30
Non-U.S.	6,777	60	0.89
Intercompany funding:			
U.S.	(46,327)	(1,254)	–
Non-U.S.	46,327	1,254	–
Total interest-bearing liabilities	2,162,369	9,960	0.46
Noninterest-bearing liabilities[(d)]	617,341		
Total investable funds	$ 2,779,710	$ 9,960	0.36 %
Net interest income and net yield:		$ 54,981	1.98 %
U.S.		49,242	2.25
Non-U.S.		5,739	0.97
Percentage of total assets and liabilities attributable to non-U.S. operations:			
Assets			23.5
Liabilities			20.9

(a) Negative interest income and yield are related to the impact of current interest rates combined with the fees paid on client-driven securities borrowed balances. The negative interest expense related to prime brokerage customer payables is recognized in interest expense and reported within trading liabilities - debt and all other interest-bearing liabilities.
(b) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.
(c) Includes commercial paper.
(d) Represents the amount of noninterest-bearing liabilities funding interest-earning assets.

Refer to the "Net interest income" discussion in Consolidated Results of Operations on pages 54-56 for further information.

(Table continued from previous page)

2019			2018		
Average balance	Interest	Rate	Average balance	Interest	Rate
$ 165,066	$ 3,588	2.17 %	$ 305,117	$ 5,703	1.87 %
114,938	299	0.26	100,397	204	0.20
150,205	4,068	2.71	102,144	2,427	2.38
125,224	2,078	1.66	115,006	1,392	1.21
92,625	1,423	1.54	77,027	825	1.07
38,666	151	0.39	38,055	88	0.23
200,811	6,157	3.07	121,967	4,229	3.47
94,147	3,032	3.22	86,299	2,977	3.45
287,961	8,963	3.11	200,883	6,943	3.46
31,914	654	2.05	35,805	697	1.95
898,570	49,058	5.46	882,314	46,227	5.24
91,373	2,954	3.23	95,092	2,981	3.13
53,779	2,146	3.99	52,551	2,035	3.87
2,345,279	84,571	3.61	2,212,657	76,728	3.47
850,493	6,896	0.81	802,786	4,562	0.57
265,355	2,061	0.78	242,251	1,411	0.58
164,284	3,989	2.43	117,754	2,562	2.18
63,710	641	1.01	71,528	504	0.70
147,247	2,574	1.75	147,512	2,225	1.51
87,284	1,259	1.44	85,269	1,306	1.53
22,501	568	2.52	21,079	493	2.34
241,914	8,766	3.62	239,718	7,954	3.32
6,054	41	0.68	3,528	24	0.68
(42,947)	(1,414)	–	(51,933)	(746)	–
42,947	1,414	–	51,933	746	–
1,848,842	26,795	1.45	1,731,425	21,041	1.22
496,437			481,232		
$ 2,345,279	$ 26,795	1.14 %	$ 2,212,657	$ 21,041	0.95 %
	$ 57,776	2.46 %		$ 55,687	2.52 %
	52,217	2.86		50,236	2.95
	5,559	1.07		5,451	1.05
		24.5			24.7
		22.1			22.3

Changes in net interest income, volume and rate analysis

The table below presents an attribution of net interest income between volume and rate. The attribution between volume and rate is calculated using annual average balances for each category of assets and liabilities shown in the table and the corresponding annual rates (refer to pages 300–304 for more information on average balances and rates). In this analysis, when the change cannot be isolated to either volume or rate, it has been allocated to volume. The annual rates include the impact of changes in market rates, as well as the impact of any change in composition of the various products within each category of asset or liability. This analysis is calculated separately for each category without consideration of the relationship between categories (for example, the net spread between the rates earned on assets and the rates paid on liabilities that fund those assets). As a result, changes in the granularity or groupings considered in this analysis would produce a different attribution result, and due to the complexities involved, precise allocation of changes in interest rates between volume and rates is inherently complex and judgmental.

(Unaudited)	**2020 versus 2019**			2019 versus 2018		
	Increase/(decrease) due to change in:			Increase/(decrease) due to change in:		
Year ended December 31, (On a taxable-equivalent basis; in millions)	Volume	Rate	Net change	Volume	Rate	Net change
Interest-earning assets						
Deposits with banks:						
U.S.	**$ 333**	**$ (3,153)**	**$ (2,820)**	$ (3,030)	$ 915	$ (2,115)
Non-U.S.	**(8)**	**(310)**	**(318)**	35	60	95
Federal funds sold and securities purchased under resale agreements:						
U.S.	**(83)**	**(2,644)**	**(2,727)**	1,304	337	1,641
Non-U.S.	**81**	**(1,064)**	**(983)**	168	518	686
Securities borrowed:[(a)]						
U.S.	**(24)**	**(1,704)**	**(1,728)**	236	362	598
Non-U.S.	**(1)**	**(147)**	**(148)**	2	61	63
Trading assets – debt instruments:[(b)]						
U.S.	**365**	**(1,466)**	**(1,101)**	2,416	(488)	1,928
Non-U.S.	**336**	**(555)**	**(219)**	253	(198)	55
Investment securities:						
U.S.	**3,426**	**(3,686)**	**(260)**	2,723	(703)	2,020
Non-U.S.	**38**	**(115)**	**(77)**	(79)	36	(43)
Loans:[(b)]						
U.S.	**557**	**(7,907)**	**(7,350)**	890	1,941	2,831
Non-U.S.	**74**	**(850)**	**(776)**	(122)	95	(27)
All other interest-earning assets, predominantly U.S.[(b)]	**324**	**(1,447)**	**(1,123)**	48	63	111
Change in interest income	**5,418**	**(25,048)**	**(19,630)**	4,844	2,999	7,843
Interest-bearing liabilities						
Interest-bearing deposits:						
U.S.	**495**	**(5,103)**	**(4,608)**	407	1,927	2,334
Non-U.S.	**25**	**(2,017)**	**(1,992)**	165	485	650
Federal funds purchased and securities loaned or sold under repurchase agreements:						
U.S.	**176**	**(3,302)**	**(3,126)**	1,133	294	1,427
Non-U.S.	**(51)**	**(395)**	**(446)**	(85)	222	137
Trading liabilities – debt, short-term and all other interest-bearing liabilities: [(a)(c)]						
U.S.	**2**	**(2,606)**	**(2,604)**	(5)	354	349
Non-U.S.	**36**	**(698)**	**(662)**	30	(77)	(47)
Beneficial interests issued by consolidated VIEs, predominantly U.S.	**(37)**	**(317)**	**(354)**	37	38	75
Long-term debt:						
U.S.	**131**	**(3,193)**	**(3,062)**	93	719	812
Non-U.S.	**6**	**13**	**19**	17	–	17
Intercompany funding:						
U.S.	**(89)**	**249**	**160**	293	(961)	(668)
Non-U.S.	**89**	**(249)**	**(160)**	(293)	961	668
Change in interest expense	**783**	**(17,618)**	**(16,835)**	1,792	3,962	5,754
Change in net interest income	**$ 4,635**	**$ (7,430)**	**$ (2,795)**	$ 3,052	$ (963)	$ 2,089

(a) Negative interest income and yield are related to the impact of current interest rates combined with the fees paid on client-driven securities borrowed balances. The negative interest expense related to prime brokerage customer payables is recognized in interest expense and reported within trading liabilities - debt and all other interest-bearing liabilities.

(b) In the third quarter of 2020, the Firm reclassified certain fair value option elected lending-related positions from trading assets to loans and other assets. Prior-period amounts have been revised to conform with the current presentation.

(c) Includes commercial paper.

Glossary of Terms and Acronyms

2020 Form 10-K: Annual report on Form 10-K for year ended December 31, 2020, filed with the U.S. Securities and Exchange Commission.

ABS: Asset-backed securities

AFS: Available-for-sale

ALCO: Asset Liability Committee

Amortized cost: Amount at which a financing receivable or investment is originated or acquired, adjusted for accretion or amortization of premium, discount, and net deferred fees or costs, collection of cash, charge-offs, foreign exchange, and fair value hedge accounting adjustments. For AFS securities, amortized cost is also reduced by any impairment losses recognized in earnings. Amortized cost is not reduced by the allowance for credit losses, except where explicitly presented net.

AOCI: Accumulated other comprehensive income/(loss)

ARM: Adjustable rate mortgage(s)

AUC: Assets under custody

AUM: "Assets under management": Represent assets managed by AWM on behalf of its Private Banking, Institutional and Retail clients. Includes "Committed capital not Called."

Auto loan and lease origination volume: Dollar amount of auto loans and leases originated.

AWM: Asset & Wealth Management

Beneficial interests issued by consolidated VIEs: Represents the interest of third-party holders of debt, equity securities, or other obligations, issued by VIEs that JPMorgan Chase consolidates.

Benefit obligation: Refers to the projected benefit obligation for pension plans and the accumulated postretirement benefit obligation for OPEB plans.

BHC: Bank holding company

CB: Commercial Banking

CBB: Consumer & Business Banking

CCAR: Comprehensive Capital Analysis and Review

CCB: Consumer & Community Banking

CCO: Chief Compliance Officer

CCP: "Central counterparty" is a clearing house that interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer and thereby ensuring the future performance of open contracts. A CCP becomes a counterparty to trades with market participants through novation, an open offer system, or another legally binding arrangement.

CDS: Credit default swaps

CECL: Current Expected Credit Losses

CEO: Chief Executive Officer

CET1 Capital: Common equity Tier 1 capital

CFTC: Commodity Futures Trading Commission

CFO: Chief Financial Officer

CFP: Contingency funding plan

Chase Bank USA, N.A.: Chase Bank USA, National Association

CIB: Corporate & Investment Bank

CIO: Chief Investment Office

Client assets: Represent assets under management as well as custody, brokerage, administration and deposit accounts.

Client deposits and other third-party liabilities: Deposits, as well as deposits that are swept to on-balance sheet liabilities (e.g., commercial paper, federal funds purchased and securities loaned or sold under repurchase agreements) as part of client cash management programs.

CLO: Collateralized loan obligations

CLTV: Combined loan-to-value

Collateral-dependent: A loan is considered to be collateral-dependent when repayment of the loan is expected to be provided substantially through the operation or sale of the collateral when the borrower is experiencing financial difficulty, including when foreclosure is deemed probable based on borrower delinquency.

Commercial Card: provides a wide range of payment services to corporate and public sector clients worldwide through the commercial card products. Services include procurement, corporate travel and entertainment, expense management services, and business-to-business payment solutions.

Credit cycle: A period of time over which credit quality improves, deteriorates and then improves again (or vice versa). The duration of a credit cycle can vary from a couple of years to several years.

Credit derivatives: Financial instruments whose value is derived from the credit risk associated with the debt of a third-party issuer (the reference entity) which allow one party (the protection purchaser) to transfer that risk to another party (the protection seller). Upon the occurrence of a credit event by the reference entity, which may include, among other events, the bankruptcy or failure to pay its obligations, or certain restructurings of the debt of the reference entity, neither party has recourse to the reference entity. The protection purchaser has recourse to the protection seller for the difference between the face value of the CDS contract and the fair value at the time of settling the credit derivative contract. The determination as to whether a credit event has occurred is generally made by the relevant International Swaps and Derivatives Association ("ISDA") Determinations Committee.

Glossary of Terms and Acronyms

Criticized: Criticized loans, lending-related commitments and derivative receivables that are classified as special mention, substandard and doubtful categories for regulatory purposes.

CRO: Chief Risk Officer

CTC: CIO, Treasury and Corporate

CVA: Credit valuation adjustment

Debit and credit card sales volume: Dollar amount of card member purchases, net of returns.

Deposit margin/deposit spread: Represents net interest income expressed as a percentage of average deposits.

Distributed denial-of-service attack: The use of a large number of remote computer systems to electronically send a high volume of traffic to a target website to create a service outage at the target. This is a form of cyberattack.

Dodd-Frank Act: Wall Street Reform and Consumer Protection Act

DVA: Debit valuation adjustment

EC: European Commission

Eligible HQLA: Eligible high-quality liquid assets, for purposes of calculating the LCR, is the amount of unencumbered HQLA that satisfy certain operational considerations as defined in the LCR rule.

Eligible LTD: Long-term debt satisfying certain eligibility criteria

Embedded derivatives: are implicit or explicit terms or features of a financial instrument that affect some or all of the cash flows or the value of the instrument in a manner similar to a derivative. An instrument containing such terms or features is referred to as a "hybrid." The component of the hybrid that is the non-derivative instrument is referred to as the "host." For example, callable debt is a hybrid instrument that contains a plain vanilla debt instrument (i.e., the host) and an embedded option that allows the issuer to redeem the debt issue at a specified date for a specified amount (i.e., the embedded derivative). However, a floating rate instrument is not a hybrid composed of a fixed-rate instrument and an interest rate swap.

ERISA: Employee Retirement Income Security Act of 1974

EPS: Earnings per share

ETD: "Exchange-traded derivatives": Derivative contracts that are executed on an exchange and settled via a central clearing house.

Expense categories:

- Volume- and revenue-related expenses generally correlate with changes in the related business/ transaction volume or revenue. Examples of volume- and revenue-related expenses include commissions and incentive compensation, depreciation expense related to operating lease assets, and brokerage expense related to equities trading transaction volume.
- Investments include expenses associated with supporting medium- to longer-term strategic plans of the Firm. Examples of investments include initiatives in technology (including related compensation), marketing, and compensation for new bankers and client advisors.
- Structural expenses are those associated with the day-today cost of running the bank and are expenses not covered by the above two categories. Examples of structural expenses include employee salaries and benefits, as well as noncompensation costs such as real estate and all other expenses.

EU: European Union

Fannie Mae: Federal National Mortgage Association

FASB: Financial Accounting Standards Board

FCA: Financial Conduct Authority

FCC: Firmwide Control Committee

FDIA: Federal Depository Insurance Act

FDIC: Federal Deposit Insurance Corporation

Federal Reserve: The Board of the Governors of the Federal Reserve System

FFIEC: Federal Financial Institutions Examination Council

FHA: Federal Housing Administration

FHLB: Federal Home Loan Bank

FICC: The Fixed Income Clearing Corporation

FICO score: A measure of consumer credit risk provided by credit bureaus, typically produced from statistical models by Fair Isaac Corporation utilizing data collected by the credit bureaus.

FINRA: Financial Industry Regulatory Authority

Firm: JPMorgan Chase & Co.

Forward points: Represents the interest rate differential between two currencies, which is either added to or subtracted from the current exchange rate (i.e., "spot rate") to determine the forward exchange rate.

FRBB: Federal Reserve Bank of Boston

FRBNY: Federal Reserve Bank of New York

FRC: Firmwide Risk Committee

Freddie Mac: Federal Home Loan Mortgage Corporation

Free standing derivatives: a derivative contract entered into either separate and apart from any of the Firm's other financial instruments or equity transactions. Or, in conjunction with some other transaction and is legally detachable and separately exercisable.

FSB: Financial Stability Board

Glossary of Terms and Acronyms

FTE: Fully taxable equivalent

FVA: Funding valuation adjustment

FX: Foreign exchange

G7: Group of Seven nations: Countries in the G7 are Canada, France, Germany, Italy, Japan, the U.K. and the U.S.

G7 government bonds: Bonds issued by the government of one of the G7 nations.

Ginnie Mae: Government National Mortgage Association

GSIB: Global systemically important banks

Headcount-related expense: Includes salary and benefits (excluding performance-based incentives), and other noncompensation costs related to employees.

HELOC: Home equity line of credit

Home equity – senior lien: Represents loans and commitments where JPMorgan Chase holds the first security interest on the property.

Home equity – junior lien: Represents loans and commitments where JPMorgan Chase holds a security interest that is subordinate in rank to other liens.

Households: A household is a collection of individuals or entities aggregated together by name, address, tax identifier and phone number.

HQLA: "High-quality liquid assets" consist of cash and certain high-quality liquid securities as defined in the LCR rule.

HTM: Held-to-maturity

IBOR: Interbank Offered Rate

ICAAP: Internal capital adequacy assessment process

IDI: Insured depository institutions

IHC: JPMorgan Chase Holdings LLC, an intermediate holding company

Investment-grade: An indication of credit quality based on JPMorgan Chase's internal risk assessment. The Firm considers ratings of BBB-/Baa3 or higher as investment-grade.

IPO: Initial public offering

ISDA: International Swaps and Derivatives Association

JPMorgan Chase: JPMorgan Chase & Co.

JPMorgan Chase Bank, N.A.: JPMorgan Chase Bank, National Association

JPMorgan Securities: J.P. Morgan Securities LLC

Loan-equivalent: Represents the portion of the unused commitment or other contingent exposure that is expected, based on historical portfolio experience, to become drawn prior to an event of a default by an obligor.

LCR: Liquidity coverage ratio

LDA: Loss Distribution Approach

LGD: Loss given default

LIBOR: London Interbank Offered Rate

LLC: Limited Liability Company

LOB: Line of business

LOB CROs: Line of Business and CTC Chief Risk Officers

Loss emergence period: Represents the time period between the date at which the loss is estimated to have been incurred and the ultimate realization of that loss.

LTIP: Long-term incentive plan

LTV: "Loan-to-value": For residential real estate loans, the relationship, expressed as a percentage, between the principal amount of a loan and the appraised value of the collateral (i.e., residential real estate) securing the loan.

Origination date LTV ratio
The LTV ratio at the origination date of the loan. Origination date LTV ratios are calculated based on the actual appraised values of collateral (i.e., loan-level data) at the origination date.

Current estimated LTV ratio
An estimate of the LTV as of a certain date. The current estimated LTV ratios are calculated using estimated collateral values derived from a nationally recognized home price index measured at the metropolitan statistical area ("MSA") level. These MSA-level home price indices consist of actual data to the extent available and forecasted data where actual data is not available. As a result, the estimated collateral values used to calculate these ratios do not represent actual appraised loan-level collateral values; as such, the resulting LTV ratios are necessarily imprecise and should therefore be viewed as estimates.

Combined LTV ratio
The LTV ratio considering all available lien positions, as well as unused lines, related to the property. Combined LTV ratios are used for junior lien home equity products.

Managed basis: A non-GAAP presentation of Firmwide financial results that includes reclassifications to present revenue on a fully taxable-equivalent basis. Management also uses this financial measure at the segment level, because it believes this provides information to enable investors to understand the underlying operational performance and trends of the particular business segment and facilitates a comparison of the business segment with the performance of competitors.

Master netting agreement: A single agreement with a counterparty that permits multiple transactions governed by that agreement to be terminated or accelerated and settled through a single payment in a single currency in the event of a default (e.g., bankruptcy, failure to make a required payment or securities transfer or deliver collateral or margin when due).

MBS: Mortgage-backed securities

MD&A: Management's discussion and analysis

Measurement alternative: Measures equity securities without readily determinable fair values at cost less impairment (if any), plus or minus observable price changes from an identical or similar investment of the same issuer.

Merchant Services: offers merchants payment processing capabilities, fraud and risk management, data and analytics, and other payments services. Through Merchant Services, merchants of all sizes can accept payments via credit and debit cards and payments in multiple currencies.

MEV: Macroeconomic variable

MMLF: Money Market Mutual Fund Liquidity Facility

Moody's: Moody's Investor Services

Mortgage origination channels:

Retail – Borrowers who buy or refinance a home through direct contact with a mortgage banker employed by the Firm using a branch office, the Internet or by phone. Borrowers are frequently referred to a mortgage banker by a banker in a Chase branch, real estate brokers, home builders or other third parties.

Correspondent – Banks, thrifts, other mortgage banks and other financial institutions that sell closed loans to the Firm.

Mortgage product types:

Alt-A

Alt-A loans are generally higher in credit quality than subprime loans but have characteristics that would disqualify the borrower from a traditional prime loan. Alt-A lending characteristics may include one or more of the following: (i) limited documentation; (ii) a high CLTV ratio; (iii) loans secured by non-owner occupied properties; or (iv) a debt-to-income ratio above normal limits. A substantial proportion of the Firm's Alt-A loans are those where a borrower does not provide complete documentation of his or her assets or the amount or source of his or her income.

Option ARMs

The option ARM real estate loan product is an adjustable-rate mortgage loan that provides the borrower with the option each month to make a fully amortizing, interest-only or minimum payment. The minimum payment on an option ARM loan is based on the interest rate charged during the introductory period. This introductory rate is usually significantly below the fully indexed rate. The fully indexed rate is calculated using an index rate plus a margin. Once the introductory period ends, the contractual interest rate charged on the loan increases to the fully indexed rate and adjusts monthly to reflect movements in the index. The minimum payment is typically insufficient to cover interest accrued in the prior month, and any unpaid interest is deferred and added to the principal balance of the loan. Option ARM loans are subject to payment recast, which converts the loan to a variable-rate fully amortizing loan upon meeting specified loan balance and anniversary date triggers.

Prime

Prime mortgage loans are made to borrowers with good credit records who meet specific underwriting requirements, including prescriptive requirements related to income and overall debt levels. New prime mortgage borrowers provide full documentation and generally have reliable payment histories.

Subprime

Subprime loans are loans that, prior to mid-2008, were offered to certain customers with one or more high risk characteristics, including but not limited to: (i) unreliable or poor payment histories; (ii) a high LTV ratio of greater than 80% (without borrower-paid mortgage insurance); (iii) a high debt-to-income ratio; (iv) an occupancy type for the loan is other than the borrower's primary residence; or (v) a history of delinquencies or late payments on the loan.

MSA: Metropolitan statistical areas

MSR: Mortgage servicing rights

Multi-asset: Any fund or account that allocates assets under management to more than one asset class.

NA: Data is not applicable or available for the period presented.

NAV: Net Asset Value

Net Capital Rule: Rule 15c3-1 under the Securities Exchange Act of 1934.

Net charge-off/(recovery) rate: Represents net charge-offs/(recoveries) (annualized) divided by average retained loans for the reporting period.

Net interchange income includes the following components:

- **Interchange income**: Fees earned by credit and debit card issuers on sales transactions.
- **Reward costs**: The cost to the Firm for points earned by cardholders enrolled in credit card rewards programs generally tied to sales transactions.
- **Partner payments**: Payments to co-brand credit card partners based on the cost of loyalty program rewards earned by cardholders on credit card transactions.

Net mortgage servicing revenue: Includes operating revenue earned from servicing third-party mortgage loans, which is recognized over the period in which the service is provided; changes in the fair value of MSRs; the impact of risk management activities associated with MSRs; and gains and losses on securitization of excess mortgage servicing. Net mortgage servicing revenue also includes gains and losses on sales and lower of cost or fair value adjustments of certain repurchased loans insured by U.S. government agencies.

Net production revenue: Includes fees and income recognized as earned on mortgage loans originated with the intent to sell, and the impact of risk management activities associated with the mortgage pipeline and warehouse loans. Net production revenue also includes gains and losses on sales and lower of cost or fair value adjustments on mortgage loans held-for-sale (excluding certain repurchased loans insured by U.S. government agencies), and changes in the fair value of financial instruments measured under the fair value option.

Net revenue rate: Represents Credit Card net revenue (annualized) expressed as a percentage of average loans for the period.

Net yield on interest-earning assets: The average rate for interest-earning assets less the average rate paid for all sources of funds.

NFA: National Futures Association

NM: Not meaningful

NOL: Net operating loss

Nonaccrual loans: Loans for which interest income is not recognized on an accrual basis. Loans (other than credit card loans and certain consumer loans insured by U.S. government agencies) are placed on nonaccrual status when full payment of principal and interest is not expected, regardless of delinquency status, or when principal and interest have been in default for a period of 90 days or more unless the loan is both well-secured and in the process of collection. Collateral-dependent loans are typically maintained on nonaccrual status.

Nonperforming assets: Nonperforming assets include nonaccrual loans, nonperforming derivatives and certain assets acquired in loan satisfaction, predominantly real estate owned and other commercial and personal property.

NOW: Negotiable Order of Withdrawal

NSFR: Net Stable Funding Ratio

OAS: Option-adjusted spread

OCC: Office of the Comptroller of the Currency

OCI: Other comprehensive income/(loss)

OPEB: Other postretirement employee benefit

OTTI: Other-than-temporary impairment

Over-the-counter ("OTC") derivatives: Derivative contracts that are negotiated, executed and settled bilaterally between two derivative counterparties, where one or both counterparties is a derivatives dealer.

Over-the-counter cleared ("OTC-cleared") derivatives: Derivative contracts that are negotiated and executed bilaterally, but subsequently settled via a central clearing house, such that each derivative counterparty is only exposed to the default of that clearing house.

Overhead ratio: Noninterest expense as a percentage of total net revenue.

Parent Company: JPMorgan Chase & Co.

Participating securities: Represents unvested share-based compensation awards containing nonforfeitable rights to dividends or dividend equivalents (collectively, "dividends"), which are included in the earnings per share calculation using the two-class method. JPMorgan Chase grants RSUs to certain employees under its share-based compensation programs, which entitle the recipients to receive nonforfeitable dividends during the vesting period on a basis equivalent to the dividends paid to holders of common stock. These unvested awards meet the definition of participating securities. Under the two-class method, all earnings (distributed and undistributed) are allocated to each class of common stock and participating securities, based on their respective rights to receive dividends.

PCA: Prompt corrective action

PCD: **"Purchased credit deteriorated"** assets represent acquired financial assets that as of the date of acquisition have experienced a more-than-insignificant deterioration in credit quality since origination, as determined by the Firm.

PCI: "Purchased credit-impaired" loans represented certain loans that were acquired and deemed to be credit-impaired on the acquisition date. The superseded FASB guidance allowed purchasers to aggregate credit-impaired loans acquired in the same fiscal quarter into one or more pools, provided that the loans had common risk characteristics (e.g., product type, LTV ratios, FICO scores, past due status, geographic location). A pool was then accounted for as a single asset with a single composite interest rate and an aggregate expectation of cash flows.

PD: Probability of default

PDCF: Primary Dealer Credit Facility

PPP: Paycheck Protection Program

PPPL Facility: Paycheck Protection Program Lending Facility

PRA: Prudential Regulation Authority

Pre-provision profit/(loss): Represents total net revenue less noninterest expense. The Firm believes that this financial measure is useful in assessing the ability of a lending institution to generate income in excess of its provision for credit losses.

Pretax margin: Represents income before income tax expense divided by total net revenue, which is, in management's view, a comprehensive measure of pretax performance derived by measuring earnings after all costs are taken into consideration. It is one basis upon which management evaluates the performance of AWM against the performance of their respective competitors.

Principal transactions revenue: Principal transactions revenue is driven by many factors, including:

- the bid-offer spread, which is the difference between the price at which a market participant is willing and able to

sell an instrument to the Firm and the price at which another market participant is willing and able to buy it from the Firm, and vice versa; and
- realized and unrealized gains and losses on financial instruments and commodities transactions, including those accounted for under the fair value option, primarily used in client-driven market-making activities, and on private equity investments.
  - Realized gains and losses result from the sale of instruments, closing out or termination of transactions, or interim cash payments.
  - Unrealized gains and losses result from changes in valuation.

In connection with its client-driven market-making activities, the Firm transacts in debt and equity instruments, derivatives and commodities, including physical commodities inventories and financial instruments that reference commodities.

Principal transactions revenue also includes realized and unrealized gains and losses related to:
- derivatives designated in qualifying hedge accounting relationships, primarily fair value hedges of commodity and foreign exchange risk;
- derivatives used for specific risk management purposes, primarily to mitigate credit risk and foreign exchange risk.

PSUs: Performance share units

REIT: "Real estate investment trust": A special purpose investment vehicle that provides investors with the ability to participate directly in the ownership or financing of real-estate related assets by pooling their capital to purchase and manage income property (i.e., equity REIT) and/or mortgage loans (i.e., mortgage REIT). REITs can be publicly or privately held and they also qualify for certain favorable tax considerations.

Regulatory VaR: Daily aggregated VaR calculated in accordance with regulatory rules.

REO: Real estate owned

Reported basis: Financial statements prepared under U.S. GAAP, which excludes the impact of taxable-equivalent adjustments.

Retained loans: Loans that are held-for-investment (i.e., excludes loans held-for-sale and loans at fair value).

Revenue wallet: Proportion of fee revenue based on estimates of investment banking fees generated across the industry (i.e., the revenue wallet) from investment banking transactions in M&A, equity and debt underwriting, and loan syndications. Source: Dealogic, a third-party provider of investment banking competitive analysis and volume-based league tables for the above noted industry products.

RHS: Rural Housing Service of the U.S. Department of Agriculture

Risk-rated portfolio: Credit loss estimates are based on estimates of the probability of default ("PD") and loss severity given a default. The probability of default is the likelihood that a borrower will default on its obligation; the loss given default ("LGD") is the estimated loss on the loan that would be realized upon the default and takes into consideration collateral and structural support for each credit facility.

ROA: Return on assets

ROE: Return on equity

ROTCE: Return on tangible common equity

ROU assets: Right-of-use assets

RSU(s): Restricted stock units

RWA: "Risk-weighted assets": Basel III establishes two comprehensive approaches for calculating RWA (a Standardized approach and an Advanced approach) which include capital requirements for credit risk, market risk, and in the case of Basel III Advanced, also operational risk. Key differences in the calculation of credit risk RWA between the Standardized and Advanced approaches are that for Basel III Advanced, credit risk RWA is based on risk-sensitive approaches which largely rely on the use of internal credit models and parameters, whereas for Basel III Standardized, credit risk RWA is generally based on supervisory risk-weightings which vary primarily by counterparty type and asset class. Market risk RWA is calculated on a generally consistent basis between Basel III Standardized and Basel III Advanced.

S&P: Standard and Poor's 500 Index

SAR(s): Stock appreciation rights

SCB: Stress Capital Buffer

Scored portfolios: Consumer loan portfolios that predominantly include residential real estate loans, credit card loans, auto loans to individuals and certain small business loans.

SEC: Securities and Exchange Commission

Securities financing agreements: Include resale, repurchase, securities borrowed and securities loaned agreements

Seed capital: Initial JPMorgan capital invested in products, such as mutual funds, with the intention of ensuring the fund is of sufficient size to represent a viable offering to clients, enabling pricing of its shares, and allowing the manager to develop a track record. After these goals are achieved, the intent is to remove the Firm's capital from the investment.

Shelf securities: Securities registered with the SEC under a shelf registration statement that have not been issued, offered or sold. These securities are not included in league tables until they have actually been issued.

Single-name: Single reference-entities

SLR: Supplementary leverage ratio

SMBS: Stripped mortgage-backed securities

SOFR: Secured Overnight Financing Rate

SPEs: Special purpose entities

Structural interest rate risk: Represents interest rate risk of the non-trading assets and liabilities of the Firm.

Structured notes: Structured notes are financial instruments whose cash flows are linked to the movement in one or more indexes, interest rates, foreign exchange rates, commodities prices, prepayment rates, or other market variables. The notes typically contain embedded (but not separable or detachable) derivatives. Contractual cash flows for principal, interest, or both can vary in amount and timing throughout the life of the note based on non-traditional indexes or non-traditional uses of traditional interest rates or indexes.

Taxable-equivalent basis: In presenting results on a managed basis, the total net revenue for each of the business segments and the Firm is presented on a tax-equivalent basis. Accordingly, revenue from investments that receive tax credits and tax-exempt securities is presented in managed basis results on a level comparable to taxable investments and securities; the corresponding income tax impact related to tax-exempt items is recorded within income tax expense.

TBVPS: Tangible book value per share

TCE: Tangible common equity

TDR: "Troubled debt restructuring" is deemed to occur when the Firm modifies the original terms of a loan agreement by granting a concession to a borrower that is experiencing financial difficulty. Loans with short-term and other insignificant modifications that are not considered concessions are not TDRs.

TLAC: Total loss-absorbing capacity

U.K.: United Kingdom

Unaudited: Financial statements and information that have not been subjected to auditing procedures sufficient to permit an independent certified public accountant to express an opinion.

U.S.: United States of America

U.S. government agencies: U.S. government agencies include, but are not limited to, agencies such as Ginnie Mae and FHA, and do not include Fannie Mae and Freddie Mac which are U.S. government-sponsored enterprises ("U.S. GSEs"). In general, obligations of U.S. government agencies are fully and explicitly guaranteed as to the timely payment of principal and interest by the full faith and credit of the U.S. government in the event of a default.

U.S. GAAP: Accounting principles generally accepted in the U.S.

U.S. GSE(s): "U.S. government-sponsored enterprises" are quasi-governmental, privately-held entities established or chartered by the U.S. government to serve public purposes as specified by the U.S. Congress to improve the flow of credit to specific sectors of the economy and provide certain essential services to the public. U.S. GSEs include Fannie Mae and Freddie Mac, but do not include Ginnie Mae or FHA. U.S. GSE obligations are not explicitly guaranteed as to the timely payment of principal and interest by the full faith and credit of the U.S. government.

U.S. LCR: Liquidity coverage ratio under the final U.S. rule.

U.S. Treasury: U.S. Department of the Treasury

VA: U.S. Department of Veterans Affairs

VaR: "Value-at-risk" is a measure of the dollar amount of potential loss from adverse market moves in an ordinary market environment.

VCG: Valuation Control Group

VGF: Valuation Governance Forum

VIEs: Variable interest entities

Warehouse loans: Consist of prime mortgages originated with the intent to sell that are accounted for at fair value and classified as loans.

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Annual Report on Form 10-K
The Annual Report on Form 10-K of JPMorgan Chase & Co. as filed with the U.S. Securities and Exchange Commission will be made available without charge upon request to:

Office of the Secretary
JPMorgan Chase & Co.
4 New York Plaza
New York, NY 10004-2413

Stock listing
New York Stock Exchange

The New York Stock Exchange ticker symbol for the common stock of JPMorgan Chase & Co. is JPM.

Financial information about JPMorgan Chase & Co. can be accessed by visiting the Investor Relations website at jpmorganchase.com. Additional questions should be addressed to:

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Directors
To contact any of the Board members or committee chairs, the Lead Independent Director or the non-management directors as a group, please mail correspondence to:

JPMorgan Chase & Co.
Attention (Board member(s))
Office of the Secretary
4 New York Plaza
New York, NY 10004-2413

The Corporate Governance Principles, the charters of the principal standing Board committees, the Code of Conduct, the Code of Ethics for Finance Professionals and other governance information can be accessed by visiting our website at jpmorganchase.com and clicking on "Governance" under the "Who We Are" tab.

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